ENGINEERING NEWS-RECORD

JANUARY 22, 1953

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★ BRIDGE JACKED DOWN 40 FEET

★ DEEP CAISSONS HOLD RIVER BANK

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ENGINEERING REPORTS:

800,000 YARDS OF CONCRETE will be needed to complete Lookout Point Dam on the Willamette River near Lowell, Oregon. G-E powered cableway—2600 feet long with 25-ton hook capacity—is of radial type, with stationary 428-foot-high head tower and movable tail tower. Maximum conveying speed is 1800 fpm, maximum hoisting speed is 470 fpm.

Complete electrification keeps Lookout Point on schedule

Morrison-Knudsen selects G-E drives to batch and place concrete at Oregon dam

To meet a tight work schedule at the Corps of Engineers' Lookout Point Dam, the Morrison-Knudsen Co. relies on modern construction equipment—electrified throughout by General Electric. This equipment, spearheaded by a Travelift cableway built by Construction Improvements Ltd., and Lidgerwood Industries Inc. is helping to place an average of 2000 yards of concrete per day.

Lookout Point, an earth-and-gravel-fill dam located at Lowell, Oregon, is a combined flood-control and power-generation project scheduled for 1953 completion. To heavy construction people, it provides one more example of the effective use of *electrified* equipment on jobs where smooth, dependable operation is an everyday "must."

Whether you buy or build construction equipment, you'll find it's safer, more flexible, and more efficient when electrified by G-E.—with skilled engineering help in application, installation, and service. Find out how this equipment and service can pay off for you by contacting your nearest G-E Apparatus Sales Office. General Electric Co., Schenectady 5, N. Y. 664-25

CABLEWAY is driven by this G-E 500-hp, 2300-volt wound-rotor motor. G-E drives also power conveyors, rock crushers, and batch-plant equipment.

CENTRALIZED CONTROL equipment for cableway includes (left to right) Limitamp high-voltage primary panel, secondary control, and cast-grid resistors.

Engineered Electrical Systems for Heavy Construction

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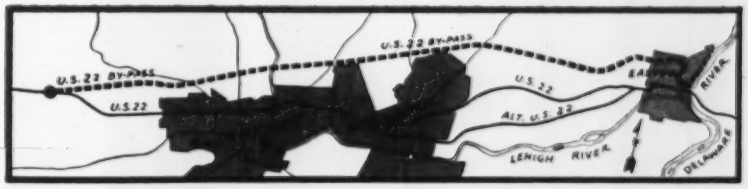
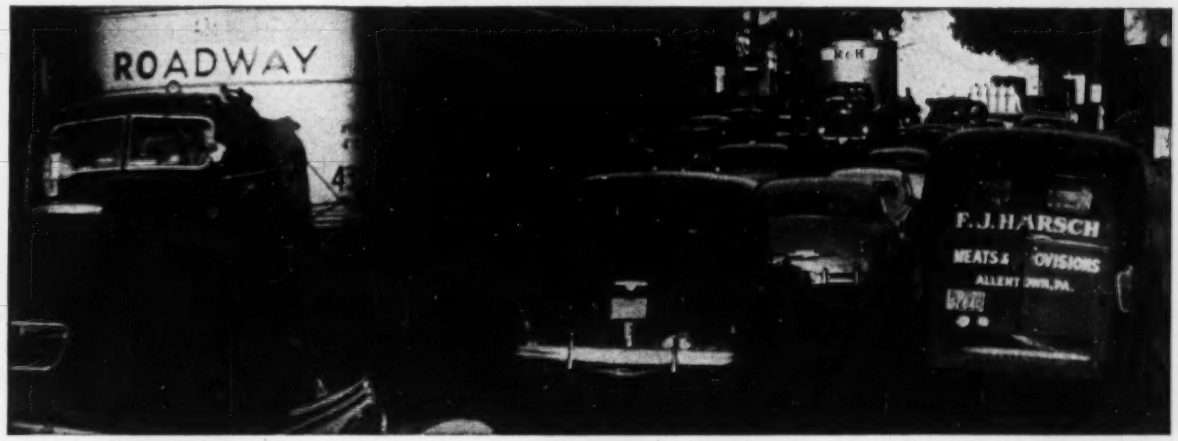


New by-pass to ease congestion in Lehigh Valley area



This bottleneck on Allentown's Tilghman Street is one of many along the present congested Route 22 that the new by-pass is intended to relieve.

Below: The western end of the new Route 22 by-pass, just outside of Allentown. The 4-lane highway will run north of Allentown and Bethlehem, and re-join old Route 22 at Easton. Completion is expected in late 1953 or mid 1954.

One of the critical traffic bottlenecks in Pennsylvania is in the heavily-populated Allentown-Bethlehem-Easton area of the Lehigh Valley. Here Route 22 winds through three industrial cities, and tourists and truckers battle traffic stymied by narrow bridges, stoplights and urban rush hour buses and automobiles.

A new 4-lane high-speed by-pass, 22.5 miles long and now under construction, will skirt this area to the north, substantially cutting the time needed to pass from the New Jersey state line to the highways leading west.

This $16,000,000 limited-access highway will have two 24-foot roadways with a 16-foot medial strip. Traffic interchanges will permit the free flow of traffic on and off the by-pass, and grade crossings will be eliminated by under- and overpasses. Bethlehem Steel is furnishing structural shapes, reinforcing steel, dowel units and guard rails.

With 52,000,000 registered vehicles on the road today, the work that state highway departments and roadbuilders are doing to relieve congested highways throughout the country is of tremendous importance. The Route 22 by-pass is one good example of how this work is going forward.

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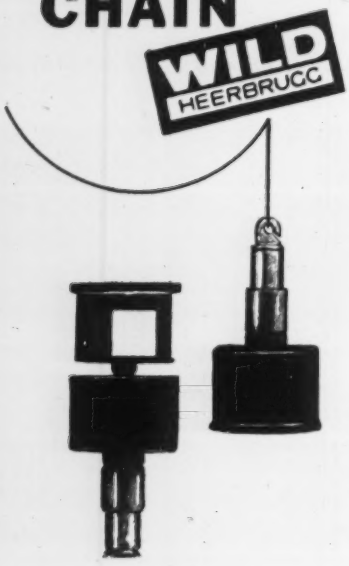

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ENGINEERING NEWS-RECORD

ABC Member ABC

Volume 150 January 22, 1953 No. 4

WALDO G. BOWMAN
Editor

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ROBERT F. BOGER
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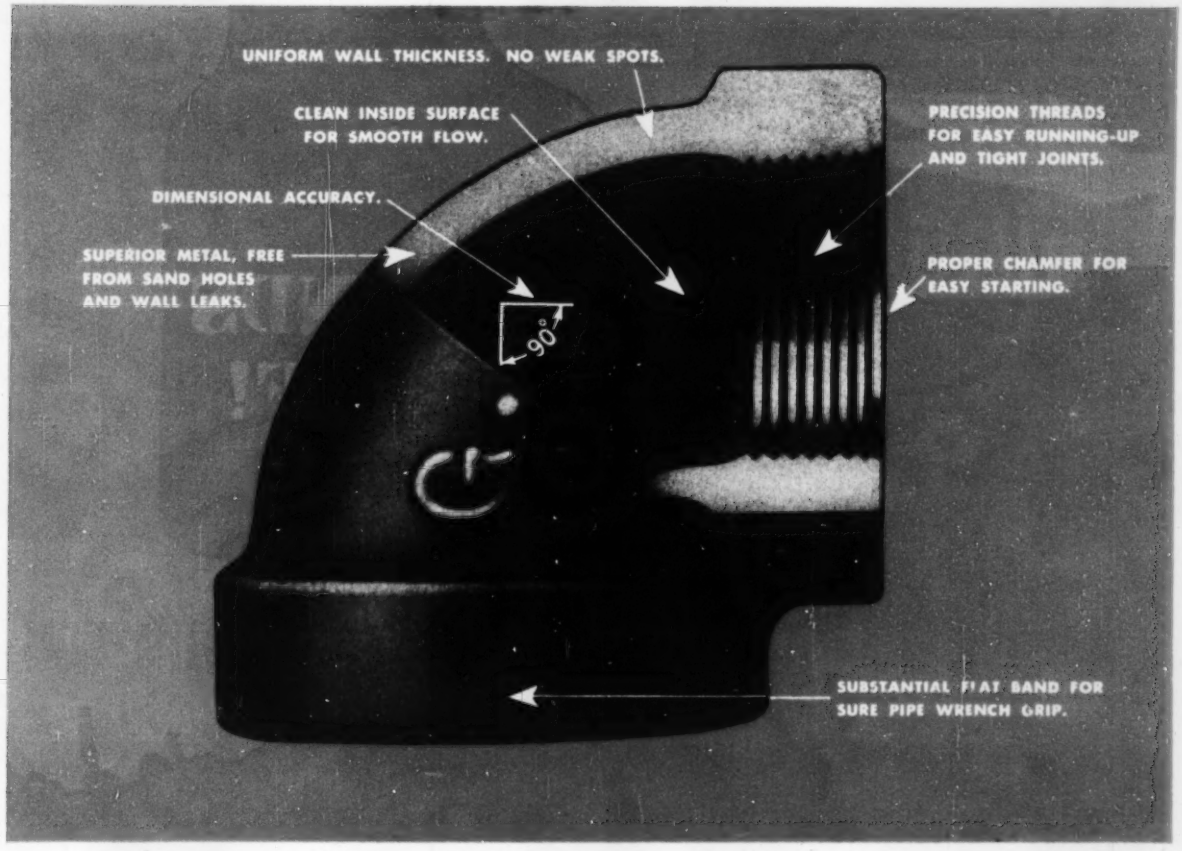
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Penta treatment of bridge timbers extends life of these members many times over. (Below) Portion of bridge on 14-wheel trailer after treatment by National Wood Treating Corp., Oroville, California.

MONSANTO PENTA adds years to life of RAILROAD BRIDGES

U.S. Air Force photos

At Beale Air Force Base in California, two special prefabricated trestle bridges support critical troop and equipment trains. By pressure-treating the timbers with Monsanto Penta before construction, the contractor multiplied the life of the bridges—and in the process saved taxpayers a considerable sum. Treatment specified was 8# net retention per cubic foot of wood with a 5% Penta-in-oil solution.

Monsanto Penta assures contractors of *permanence*. Penta pressure-treated wood has the preservative forced deeply into its cells. It won't decay . . . insects won't eat it. It is clean, safe, and easy to handle.

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GULF PRODUCTS *and* FINE SERVICE

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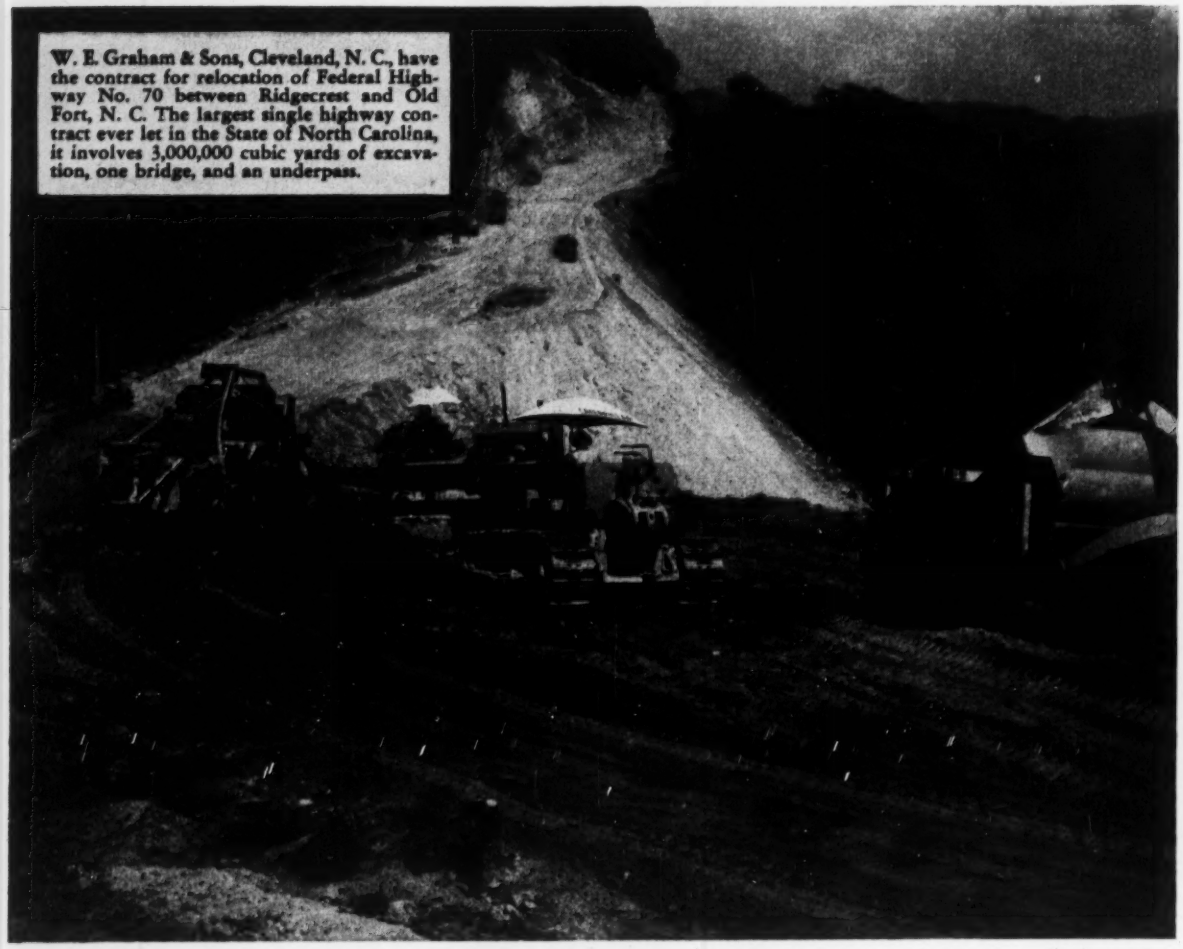

W. E. Graham & Sons, Cleveland, N. C., have the contract for relocation of Federal Highway No. 70 between Ridgecrest and Old Fort, N. C. The largest single highway contract ever let in the State of North Carolina, it involves 3,000,000 cubic yards of excavation, one bridge, and an underpass.

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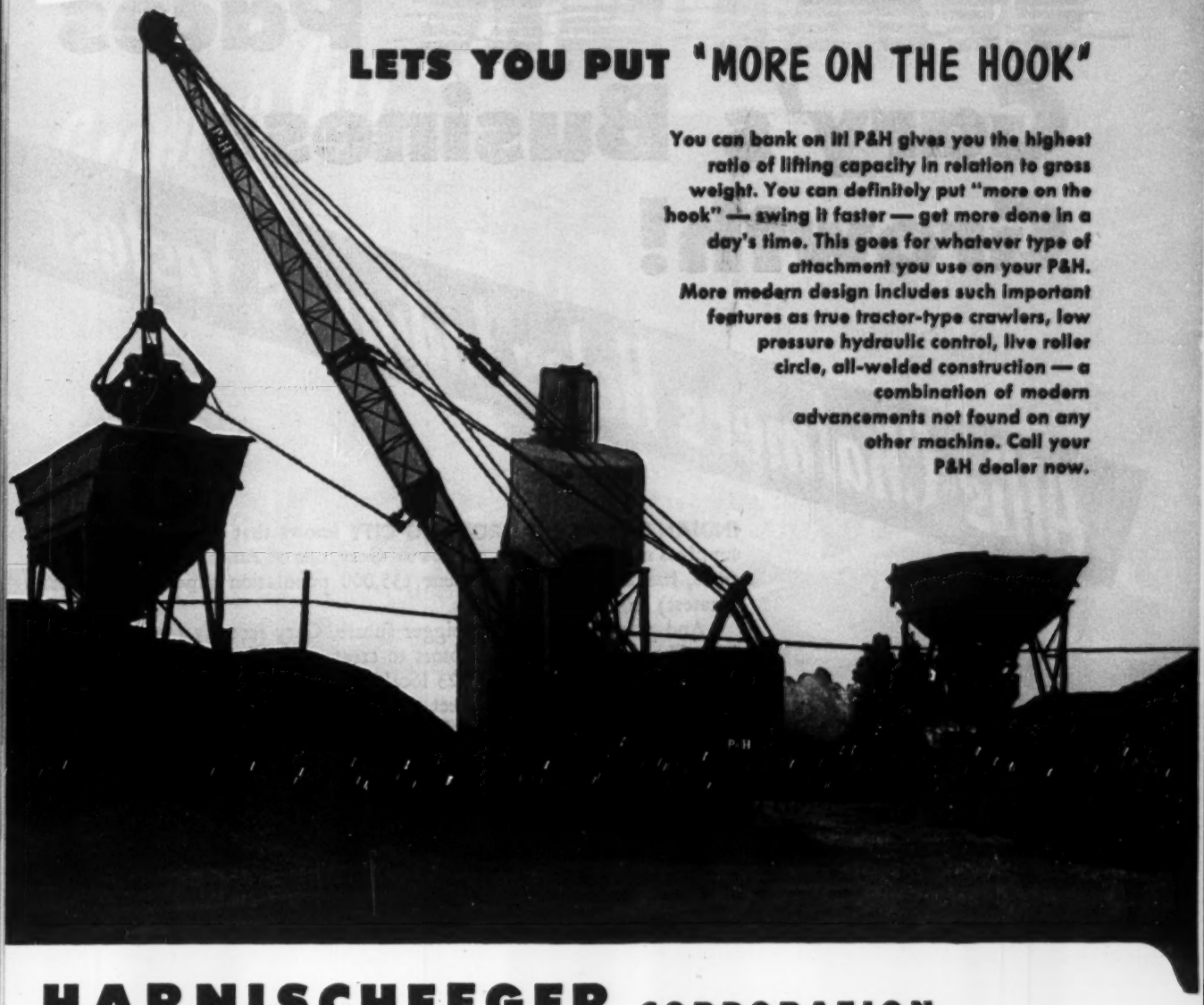

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Allis-Chalmers Helps Indiana's Fastest

INDIANA'S FASTEST GROWING CITY knows that an adequate water supply is necessary for future growth. Gary, one of America's few planned cities, has zoomed to its present 135,000 population (Indiana's second greatest) in less than 50 years.

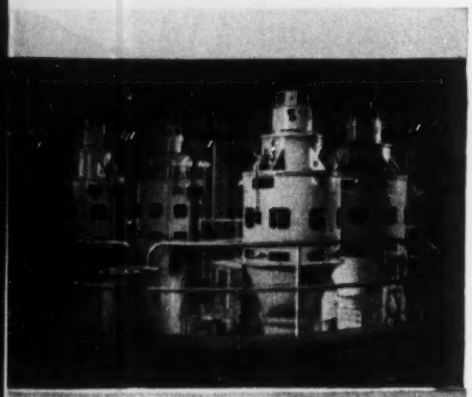
And planning for a still bigger future, Gary recently installed these Allis-Chalmers pumps and motors to create capacity adequate for population *doubling!* With over 123 local industries — including the world's largest complete steel mill, sheet and tin mill, and cement plant — Gary is wise to allow for plenty of future growth.

The Gary-Hobart Water Corporation operation also is unusual in that all city water comes through a Lake Michigan suction tunnel 6 ft in diameter and *three miles long.* When power fails, this moving column of water can cause a surge flooding the main pumping station.

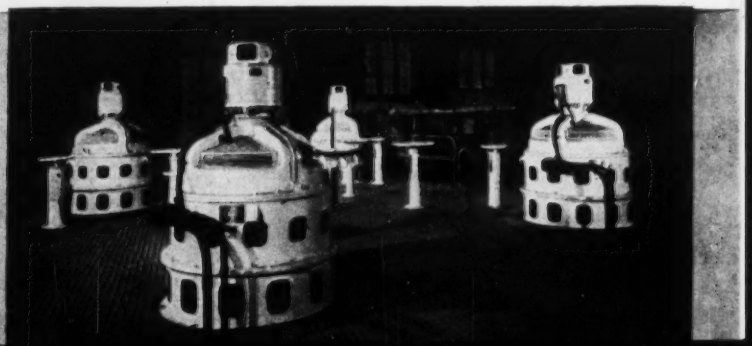
With the original horizontal pumping units, a surge rendered motors inoperative for some time. The four new Allis-Chalmers vertical mixed flow units were made 57 ft long so that the impellers are kept submerged despite "draw down" and yet the 350 hp motors cannot be flooded. Fifteen foot extensions protect the motors for the four high head units.

When *your city* plans expansion or modernization, do as Gary and other leading cities are doing — take advantage of Allis-Chalmers experience in municipal pumping equipment. Ask for Pump Bulletin 08B6146A, containing 24 pages fact-packed with the kind of engineering data you'll want to keep handy. Just call your nearest A-C sales office or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3792

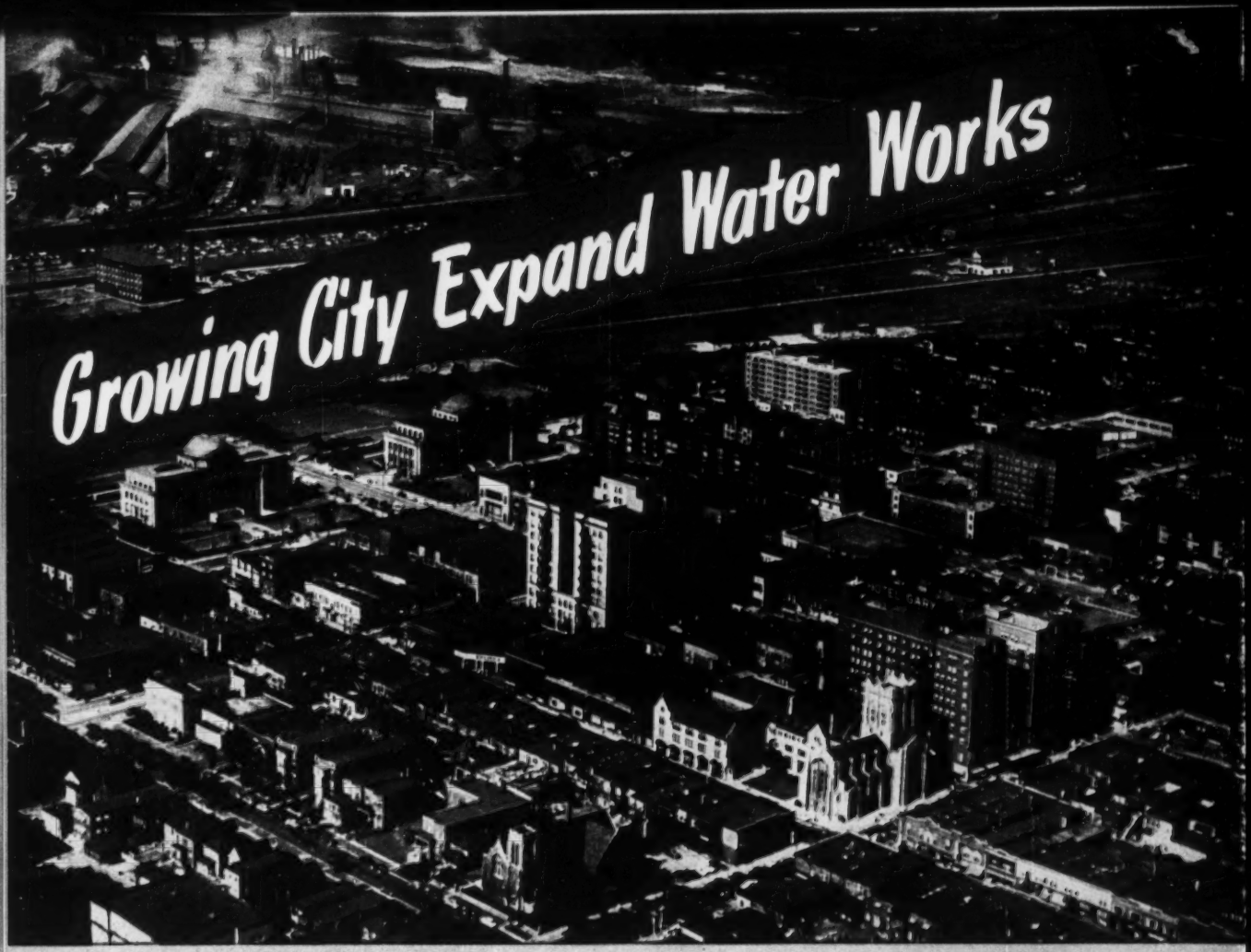


LOW LIFT PUMPS in the 100 ft deep well at tunnel's end are 36 x 24 in. mixed flows, each rated 15,000 gpm against 50 ft head; driven by 350 hp, 720 rpm synchronous motors. Units were made 57 ft long to avoid motor flooding in case of power failure. In 1951, Gary's peak pumpage rate for one hour was 44 M.G.D.

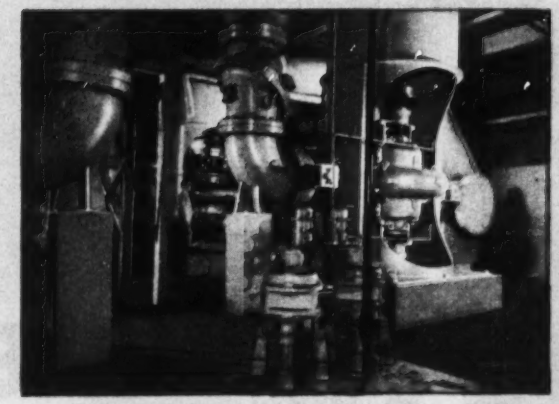


HIGH HEAD PUMPS are 24 x 18 in. centrifugals, each rated 14,000 gpm against 160 ft head; driven by 700 hp, 720 rpm synchronous motors. The high head units pump directly into the mains, operating in series with the mixed flow pumps. Special 15 ft high barrel type supports keep the motors out of flooding danger.

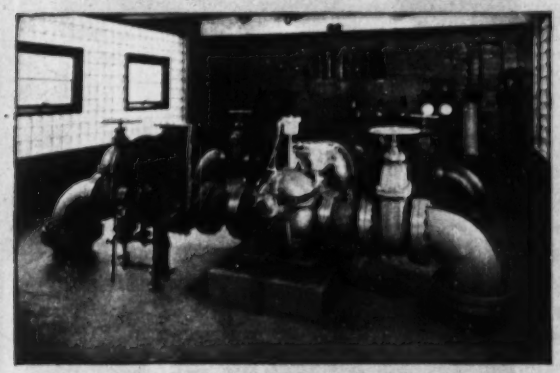
Growing City Expand Water Works



METROPOLITAN GARY, the planned city built on the sand dunes at the lower end of Lake Michigan. Portions of steel mills and lake are seen in the distance.



GREAT FLEXIBILITY at the main pumping station is provided by the header and valving arrangement. Operation can be varied from only one high head unit in service — pumping directly from well to mains and adequate for light loads — to all eight units pumping simultaneously — adequate for Gary population doubling.



GLEN PARK BOOSTER STATION is also exclusively Allis-Chalmers. These two 12 x 12 in. centrifugal pumps are each rated 3200 gpm against 115 ft head; driven by 50 hp, 1160 rpm induction motors. To maintain constant pressure, they are automatically remote-controlled from the water tower.

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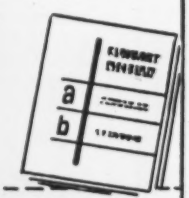

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READER COMMENT

Prestressing costs less

Sir: P. F. Blair has amplified your story, "Maneuvers in Oklahoma," (ENR Sept. 18, 1952, p. 26) and gives an explanation as to why in this case prestressed bridges enjoy a highly competitive position with structural steel. He also wrote that, given equal opportunity, prestressed concrete will show an over-all saving on spans of 30 to 60 ft of 20% or greater (ENR Nov. 27, 1952, p. 12).

If contractors are familiar with the stressing and the making of high-grade concrete, so that these parts of the work are not overpriced (to pay for the acquisition of the skill at the sole expense of that particular purchaser), the relative cost for these short spans is, in my experience, generally some 10% in favor of prestressing.

Other factors enter when spans are greater than 60 ft. But it looks as if prestressed concrete has an advantage for new bridges on first cost and maintenance cost up to spans of about 150 ft, and perhaps very much larger. Replacement of existing railroad bridges on the same piers, by rolling in, and of some special types of bridges are likely to remain exceptions. However, by prestressing the steel, some existing bridges can be strengthened; so replacement can sometimes be avoided (the British Railways are doing this).

The design of all prestressed bridges does, however, require experience with prestressed concrete as well as with bridges. Too often, an apparently good design has some doubtful feature that may bring prestressing, as well as, the too-enthusiastic designer, into disrepute.

For consulting egineers, prestressed concrete means more, often much more, site supervision, and where continuity is involved often much more computation and checking.

DONOVAN H. LEE
Consulting Engineer
London, England

Cables were in tubes

Sir: Your article about the Barrett & Hilp Garage in San Francisco (Nov. 13, p. 38) was extremely interesting.

We would like to point out, however, that about two-thirds of the wire strands were placed in our new plastic split tubing with corrugated overlap, which we developed specially for prestressing applications.

The tubing for the 1½-in. dia strands used by Barrett & Hilp was 1⅜ in. inside diameter, the corrugated overlap was ½ in. wide, and the wall thickness was 0.040 in.

This plastic tubing was chosen because it is most economical in application. It is easier and faster to apply than any other covering.

Paper was actually used on the first third of this job only, and this is the part that your editor recorded.

ROBERT MARX
Development Engineer
Anchor Plastics Co.
New York, N. Y.

CALENDAR

American Society of Landscape Architects, annual meeting, Ansley Hotel, Atlanta, Ga., Jan. 26-28

Association of Asphalt Paving Technologists, Rice Hotel, Houston, Tex., Jan. 26-28.

Associated Equipment Distributors, annual convention, Conrad Hilton Hotel, Chicago, Ill., Feb. 1-5.

Mason Contractors Association of America, Sherman Hotel, Chicago, Ill., Feb. 1-4.

California Street and Highway Conference, University of California, Berkeley, Feb. 4-6. California Municipal Refuse Collection and Disposal Conference, University of California, Berkeley, Feb. 5-6.

American Road Builders Assn., Hotel Statler, Boston, Mass., Feb. 9-11.

American Concrete Institute, annual convention, Statler Hotel, Boston, Mass., Feb. 17-19.

Interamerican Municipalities Congress, Montevideo, Uruguay, Feb. 20-28.

Ohio Water Clinic, Ohio State University, Columbus, Feb. 19-20.

Illinois Conference on Highway Engineering, Urbana, Feb. 24-26.

Industry conference on air pollution abatement, Hotel Statler, Detroit, Mich., Feb. 26-27.

American Concrete Pipe Association, annual convention, Baker Hotel, Dallas, Tex., Feb. 26-28.

American Concrete Pressure Pipe Assn., annual convention, Baker Hotel, Dallas, Tex., Feb. 25.

American Concrete Agricultural Pipe Assn., annual convention, Baker Hotel, Dallas, Tex., Feb. 26.

Ohio Society of Professional Engineers, annual meeting, Neil House, Columbus, Mar. 5-7.

American Railway Engineering Association, annual meeting, Palmer House, Chicago, Mar. 17-19.

Southern Municipal and Industrial Wastes Conference, University of North Carolina, Chapel Hill, Mar. 19-20.

Third Midwestern Conference on Fluid Mechanics, University of Minnesota, Minneapolis, Mar. 23-25.

Diamond Jubilee Convocation, Case Institute of Technology, Cleveland, Ohio, April 10-11. Topic "The Challenge of Free Men in the Atomic Age."

American Water Works Association, annual meeting, Municipal Auditorium, Grand Rapids, Mich., May 10-15.

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MODERN harsh, dry mixes of 1½″ to 3″ slump concrete are extremely difficult to spread manually or by makeshift methods with speed and economy. That's why Blaw-Knox Spreaders have become standard equipment in so many high-speed paving operations. This Spreader with the Transverse Blade is the *only* spreader that automatically moves the concrete longitudinally and transversely at the same time, spreading it uniformly to the width and elevation required, no matter where it is placed on the subgrade.

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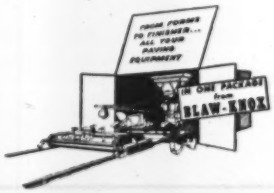

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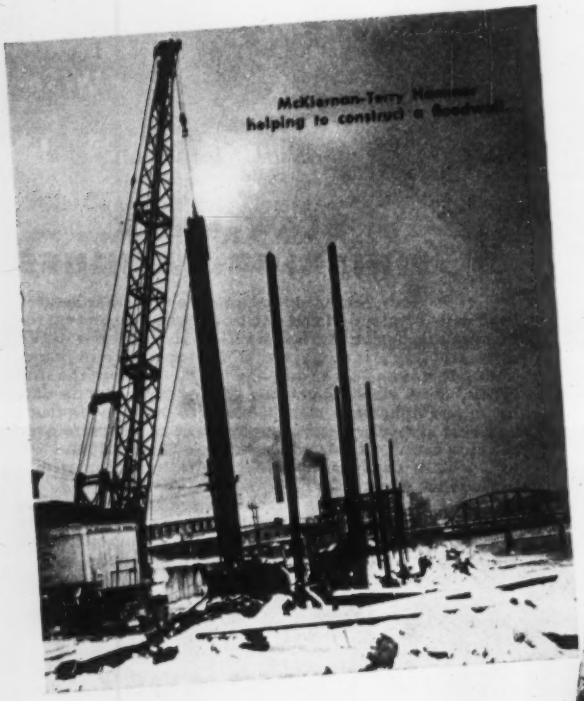

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FOR A FLOOD WALL

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Contractors all over the world have proved the power, dependability and versatility of McKiernan-Terry equipment. Bulletin describes complete McKiernan-Terry line including 16 sizes of pile hammers and 2 sizes of pile extractors. Write for your copy today.

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MX 339

State and local debt—too big?

State and local governments owe about twice as much money as they did in 1929. Net debt reached the neighborhood of $27 billion at the end of 1952, compared with about $13.5 billion 23 years ago.

These debts are growing faster than ever before. They have increased by at least $2 billion in each year since 1949, and growth in net state and local debt came close to $3 billion last year.

Are state and local debts too large? The answer is important for the construction industry. State and local governments have a huge backlog of construction needs, estimated at $100 billion or more. But they will have to borrow heavily to finance their construction requirements. The question is: Is present debt so great that the new money that will be needed can't be raised?

• **How great a burden?**—Certainly there are some governments that are greatly burdened by debt. Large central cities most frequently fall into this category. But the same is not true of states and municipalities as a group. The present debt is actually a considerably lighter burden than was the debt back in the Twenties.

For one thing, borrowing money is much cheaper today than it was twenty to thirty years ago. Average yields of state and municipal bonds ran over 4% in those days—sometimes over 5%. Since the war, average yields have often been less than half what they used to be. Two powerful influences have brought the costs of borrowing down: one is the general fall in interest rates; the other is the tremendous increase in taxes, which makes tax-exempt state and local securities especially attractive.

In addition, state and local debt is now backed by much higher incomes. Basically, it's the incomes and property of the public that makes these debts sound or unsound. And total personal incomes are now about 215% higher than they were in 1929, whereas state and local debt is up only 100%. Total property values are also much higher than they were in 1929.

Finally, state and local governments recently have developed some methods of borrowing which further ease their burden of debt. Revenue bonds—secured by charges for the use of roads, sewers, or even schools—often can be sold at lower yields than conventional bonds. Revenue bonds probably will be used more in the future. And the most recent experiment—using federal guarantees to make local housing bonds more attractive—also may be extended to other types of construction in the future.

• **Still problems**—All these developments help ease the burden of debt. But there are still plenty of problems for state and local borrowers. They may have to pay higher interest charges if federal taxes are cut (Trend, January 15). There is a limit to the amount of new debt the market is able to absorb at any one time—whether it's "sound" debt or not—unless the borrower is willing to pay substantially higher interest rates.

Certain artificial barriers to debt expansion also plague some public borrowers. Assessed valuations are one; in many places, they have not kept pace with the actual value of property, so taxes are inadequate to warrant carrying a higher debt. Also, many areas have reached their legal limits on borrowing, and many others are close to the limit. But these things can be changed—and the heavy pressure of needs for construction, plus recent public voting records, indicate that improvements will be made.

So the general indication is that present debt problems are not especially severe, except in a few localities. States and municipalities will be able to increase their debts to a substantially higher level than that of today, if they are willing to pay slightly higher interest costs and make use of the new methods of borrowing that have been developed in the last few years.

Constant Pounding Causes this—

How THORITE Patching Mortar, repaired and added strength to loading platform in 30 minutes

A QUICK PATCH for concrete walls and floors

Smaller areas, around large one, is in complete state of disintegration.

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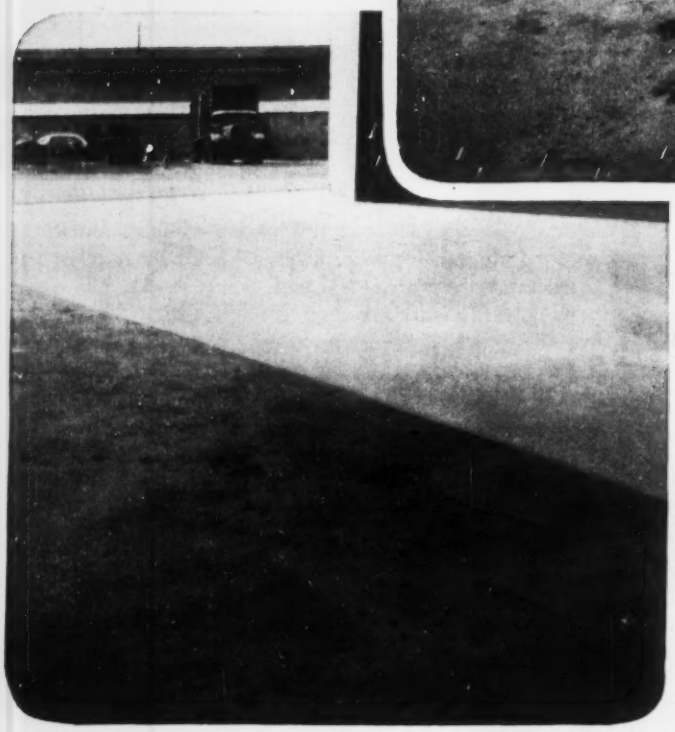
Largest area is 2' long and 18" wide, 1½" deep.



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• **Same idea on spending**—The Budget Bureau is on the same track as congressional committees in calling for complete, up-to-date information from U. S. agencies that seek to justify the start of new water-resource development projects. Although the present staff goes out this week, Washington is betting the incoming budget director will let the order stand—like Congress, Budget wants to know flatly what the money's wanted for.

Key is a 21-page set of new rules sent out last week to all agencies, requiring them to submit information on a uniform basis for these bedrock data: (1) benefits and costs for evaluating a project; (2) purposes of project and criteria for allocation costs; (3) time period for federal reimbursement; and (4) any special standards pertaining to power, flood control, reclamation, recreation and water supply.

• **GM nameplate for construction equipment?**—Close observers in Detroit say you can discount those reports that General Motors will bring out its own line of off-the-road and construction equipment real soon. It's no secret that GM has been working along these lines, but the observers say it's far more likely the company will buy in some established manufacturing name, rather than start manufacturing from scratch.

• **Interior appointments**—Who will assist Douglas McKay in running the Department of the Interior is still pretty much up in the air. Some say this is because Gov. McKay is farther from Eisenhower's ear than any of the other Cabinet members. In any event, Interior is the only department that does not yet have either an Under-Secretary or an Assistant Secretary. Ralph Tudor, consulting engineer, San Francisco, is being seriously considered for one of these jobs, but whether he would be able to take the job, and whether he can get all of the necessary political endorsements are still unanswered questions. No one yet seems to be in the forefront of possibilities for the important post of Commissioner of Reclamation.

• **'Quoddy up again**—Apparently there's no killing the thus-far ill-fated Passamaquoddy tidal power project. Maine's congressional delegation has asked Congress to vote $3 million for a survey of how much it would cost to build the project—and to direct the International Joint Commission on U. S.-Canada boundary waters to make the survey.

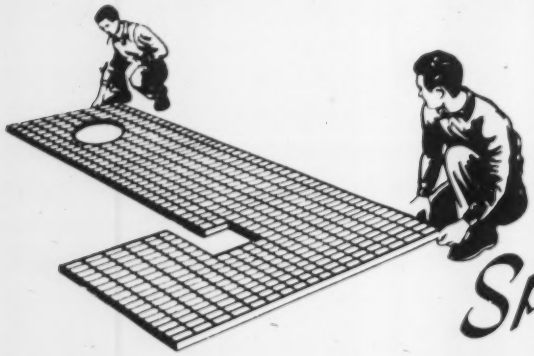
• **Saskatchewan Dam down again**—Long-time proponents of a huge earth dam on the South Saskatchewan River near Saskatoon (ENR Aug. 14, 1947, p. 217) apparently are heading for another defeat. A royal commission—most recent body to investigate feasibility—is reliably reported ready to tell Parliament that it doesn't think too much of the idea.

The proposed dam would be 215 ft high, 8,000 ft long, back up a reservoir with an 8,000,000-acre-ft capacity, and is pushed as a source of vast electric power and a means of transforming a desert area into producing irrigated land.

Royal commissioners are reported to feel that not enough planning has been done, legal difficulties haven't been explored properly (three provinces, and the state of Montana have rights to Saskatchewan waters). Interesting note: Original construction cost was fixed at $66 million. Best guess at present-day costs—$250 million.

• **No floods?**—Army Engineers, taking a cautious look at Great Plains snow packs, were cheerful about the 1953 flood outlook. Their judgment: Floods aren't likely this year—even though there are three months of winter yet to go.

Reason: Much of the Dakota prairies is brown and bare now; Nebraska and Iowa haven't nearly the heavy snow cover they had a year ago (which resulted in 1952's heavy floods). Thus, any floods that may develop would have to come out of snow that hasn't yet fallen.



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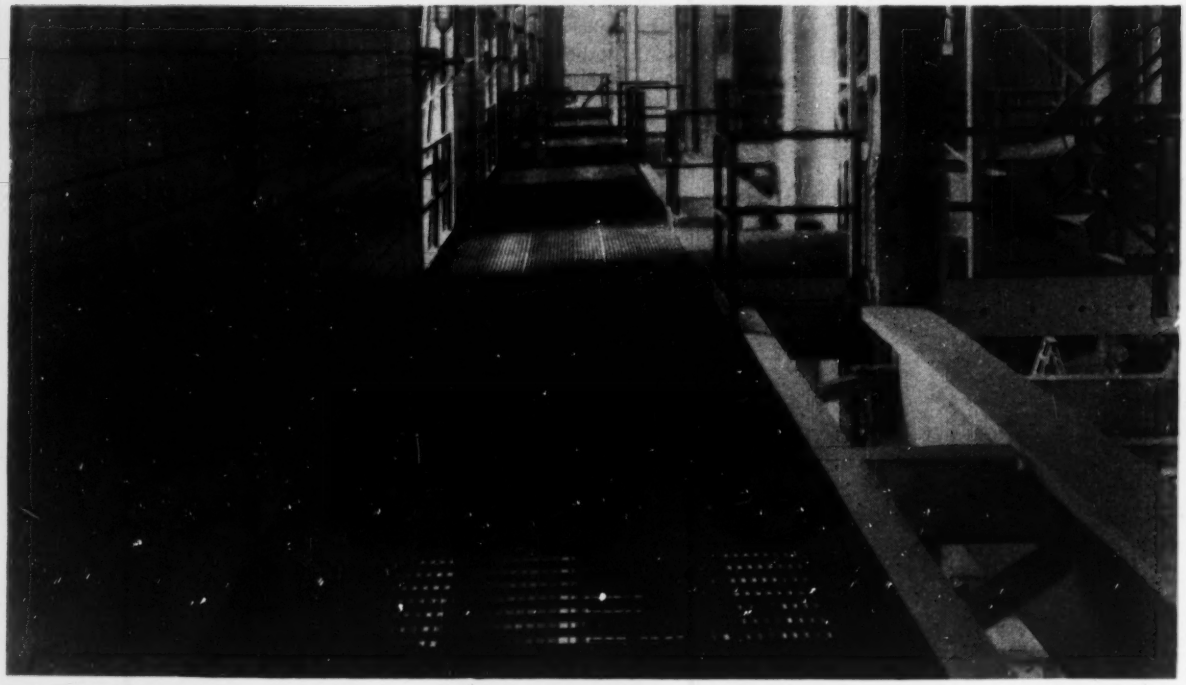

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Engineering contract policy altered

Defense Department removes design services from "bolts and nuts" procurement provisions

The national societies for the design professions have won a two-year battle to have the Defense Department change and standardize procurement regulations for architect-engineering service contracts.

The three military services are now putting into effect uniform standards that apply equally to the Army Corps of Engineers, the Navy Bureau of Yards and Docks, and the Air Force Director of Installations. Hereafter there will be no ground for any allegation that the Defense Department uses competitive bidding to obtain professional engineering and architectural services.

The sole criterion will be the professional qualifications of the firm in its ability to carry out the requirements of the contract. Judgment of professional qualifications will be based on historical experience of the firm; capacity to finish work on time; location of the firm in relation to where the work will be performed; and volume of work already awarded to the firm by the Defense Department.

Whenever a contract comes up requiring architect-engineering services, procurement officers are now required to pick several firms that broadly meet requirements. Then these are weeded down to about three firms which are classified on a one-two-three preference basis.

Negotiations begin with the number one firm first. If no contract can be negotiated with the first firm, then the procurement officers work down the list until eventually a contract can be reached.

• **How it will work**—The Defense Department standards for architect-engineer contracts spell out the conditions under which fees are negotiated for both cost-plus-fixed-fee and lump-sum types of contracts, involving preparation of plans and specifications for public works. In addition, another part sets forth how fees are negotiated for contracts calling for the supervision and inspection of construction by designers.

One bone of contention in handling architect-engineer contracts has been over what costs should be included under the rare cost-plus-fixed-fee type of contracts sometimes negotiated to meet the demands of "crash" projects. Existing regulations provide that this type of contract will be used only when a lump sum contract cannot be negotiated, and the number of "crash" programs is steadily diminishing as defense demands are better planned.

Most cost-plus-fixed-fee contracts have specified that only direct costs will be permitted. But the trouble was that what constituted a direct cost for one firm might not apply for another. So top contracting specialists worked out a definition of what direct cost would be considered. Both industrial and military men seemed to agree on the definition.

First of all, negotiators are bound by the provisions of the Armed Services Procurement Act where it applies to cost-type contracts. So where the provisions of that act are found to cover direct costs of cost-plus-fixed-fee type contracts of another nature, they must be applied to architect-engineer contracts too.

Direct costs as they are defined under the new agreement include the following items:

• Salaries including overtime to architects, consultants, engineers, draftsmen, also the time of partners who are directly engaged on architectural, engineering, estimating, scheduling and other similar services rendered under the contract. In the case where a firm employs full-time personnel, their salaries will be included as a cost only to the extent that they work on the contract.

• Salaries of partners or other principals in a firm who work on a contract will be allowed as a cost only to the extent of what it would cost to hire equal outside help. If a firm is selected also on the basis of partnership ability to contribute, as a direct cost may be included reasonable consultant rates for the partners' services.

• Other services such as transportation, living expenses, communications, commercial printing, binding and art work will be allowed to the extent used under the contract.

• Overhead on direct labor is considered to include taxes on direct labor charges under federal and state social security, pension, retirement, group health, accident and life insurance payments, etc., that are in operation as an established policy of the firm; vacation, severance, sick leave and similar salary payments that are also established firm policy.

Non-allowable costs generally follow the same pattern as in other types of contracts with the government. They include commissions and bonuses for obtaining the contract, contingency reserves, contributions and donations, dividend payments, entertainment; interest on borrowing; taxes, fees, and other charges imposed on the firm's fee.

• **Significance**—The new regulations may not be tailored to meet the needs of all designers doing business with the military but at least they will resolve the difficulty of handling each service differently. Heretofore architect-engineer contracts varied according to the service letting the contract and sometimes the shifts in procedures came so fast that engineers and architects had a hard time keeping up with the situation.

These difficulties were not encountered during World War I or World War II. They began shortly after the outbreak of the Korean war, and brought opposition from all of the national societies for the design professions.

Engineers and architects pointed out that procurement of their professional services was being placed on the same basis as procurement of "bolts and nuts" under competitive bidding procedures, a policy inconsistent with procurement methods that are used for other professional services such as legal or medical.

The professional designers' first reaction to the new regulation has been favorable. Those queried say the new system will remove procurement of designers services from the "bolts and nuts" category, and put it back on a professional basis.

Copies of the regulations may be had by writing one of the construction agencies of the services.

Recommend Golden Gate Bridge bracing

Engineer board urges addition of bottom lateral system as means of resistance to wind vibration

A board of engineers has recommended addition of a bottom lateral system to the roadway-supporting structure of the Golden Gate Bridge, to provide additional resistance to destructive vibrations induced by wind.

The board, consisting of Clifford E. Paine, chairman; O. H. Ammann and Charles E. Andrew, was retained by the bridge's board of directors early in 1952. A storm on Dec. 1, 1951, had induced vertical movement in the bridge deck of as much as 130 in.—in double amplitude—greatest in the 17-year history of the structure. The bridge board is expected to act on the recommendations at a January 22 meeting.

The engineers concluded that the bridge is "as sound as ever, but that much can be done to improve its behavior in severe wind storms." But the fact that revisions are recommended is considered an indication that the bridge might be susceptible to storm damage.

The structure is the world's longest suspension bridge, having a 4,200-ft center span and side spans of 1,125 ft.

• **Present supports**—The bridge deck is at present supported by stiffening trusses at each edge. Top chords of the trusses are connected by a top lateral system making the trusses and stiffening system an inverted U-shape in cross section. Addition of the bottom lateral system would make the supporting members into a box-shaped cross section. The bridge would then have greater resistance to the torsional wind-induced vibrations that have been found to be most damaging. Critical wind velocity that could induce torsional vibration in the deck structure would be raised from about 50 mph to nearly 80 mph, according to an estimate made by the consultants.

Cost of the work is estimated at $3.5 million. The engineers indicated that four months would be needed to prepare detailed plans and receive bids. A 9-month to 12-month construction period would follow.

• **Other steps**—Actually, the bottom lateral system is only one of three possibilities suggested by the board. If undesirable vibration characteristics are exhibited after the new bracing is installed, the board suggested addition of a center stay system. And if still more resistance is necessary, the group advocates replacing all or part of the footwalks on each side of the roadway by open steel gratings. This latter scheme, they point out, would be expensive but experience on design of the new Tacoma Narrows Bridge has demonstrated its advisability.

The board considered systems of diagonal wire-rope stays that would connect the tower tops or points along the cables with points along the floor system. This was rejected as being more expensive, rendering the entire suspension system complex and having an adverse effect on the good appearance of the bridge.

• **Bottom lateral details**—The proposed lateral system would connect directly to the bottom chord of the stiffening trusses. A panel of lateral bracing would be 100 ft long, extending over four 25-ft stiffening truss panels. The members would be made up as latticed girders. The lightest member would be a box section composed of four 4 x 4 x ⅞-in. angles laced on four sides—equivalent to the lightest member of the top lateral system.

The bottom lateral system would increase the dead load by 1,400 lb per ft. However, since tests of the steel now in the bridge showed strengths above that specified, the added weight will not increase stresses unduly in most elements of the bridge. Only in two cross struts on the tower face would design unit stresses be exceeded. This excess would be about 7½% under simultaneous occurrence of improbable live loads.

The study of the board of engineers was backed up by wind-tunnel model tests of proposed deck sections at the University of Washington. George S. Vincent, U.S. Bureau of Public Roads, conducted the model tests and Prof. F. B. Farquharson, director of the Engineering Experiment Station, University of Washington, supervised and interpreted them.

Council calls nation's economy sound

Retiring council of economic advisors asks for more public works, investment in industry

If ex-President Truman's Council of Economic Advisors had its way, the construction industry would have to take second place in any plans drawn up to check a recession.

The last official act of the old council was to issue an annual report on the state of the country's economic health. The council found things good—as of now. One member of the three-man council—John D. Clark—thought things were likely to stay that way. The other two—chairman Leon Keyserling and Robert Turner—thought there might be a fairly serious recession in the next two or three years.

If one developed, these men recommended that consumer spending be stimulated, rather than to look to increased investment in private buildings or public works as a means of halting the recession.

They said wages should be raised, prices should be cut, and taxes reduced, to make their idea pan out.

As a second line of defense, they see the need for big investments in growing industry such as housing, synthetic fibers, plastics, synthetic rubber, air conditioning units and frozen foods.

As a third line, they see a need for public works expansion. They cite surveys indicating that $30 billion would have to be spent to bring federal-aid highways to "adequate standards." They see a need for spending $7 billion to $8 billion a year on highway work over a 10-year period. They say school construction is running well behind needs foreseen by 1960. They estimate $1.8 billion per year, spent over a 10-year period, would be needed to meet hospital needs.

This is—of course—a lame duck look at things—a bowing-out by Truman's economists, not an indication of what the new administration thinks about the economic future, or how it would try to check a recession. During the campaign, President Eisenhower pledged the resources of the government to fight a recession, but did not spell out just what he would do.

Court orders pipeline removed from property

Algonquin Gas Transmission Co.—already involved in a controversy over its right to put down a gas pipeline through New York into the New England states—found itself under court order last week to rip up 13,320 linear ft of pipe already put in place.

The order was handed down by the New York State Supreme Court after a group of Westchester County taxpayers protested that Algonquin's claim to condemnation rights was not in proper legal order.

Nation's investment in highways put at $75.5 billion in new study

Highway Research Board meeting gets preview of capital investment report of the Bureau of Public Roads

An appraisal of the highway situation from the viewpoint of total investment and remaining service life was presented at the opening session of the 32nd annual meeting of the Highway Research Board, held in Washington Jan. 13-16. It was in the form of an informal preview of an elaborate study being made by the U. S. Bureau of Public Roads, which is expected to be completed in the near future. Such details as are now available were summarized at the meeting in a paper by Fred F. Farrell and Henry R. Paterick of the bureau staff, presented by Mr. Farrell.

Other high spots of the meeting were a talk on highway needs by Bertram D. Tallamy, head of the New York State Department of Public Works, an outline of plans of the National Science Foundation, a first report on the test road built last summer in Idaho, and a showing of the colored sound film just completed by the Bureau of Public Roads, which is designed to carry the lessons learned in the Maryland test road to the general public in a dramatic form. Copies of the film for public showing may now be obtained from the bureau's office in Washington.

As usual, the opening general sessions of the HRB were followed by nearly 30 special sessions sponsored by the various divisions of the board.

• **A depreciating investment**—In his talk on the BPR study of the capital investment in highways, Mr. Farrell said that during the last 45 years the capital investment in roads and streets in this country, including toll roads, amounted to $75.5 billion. As of Jan. 1, 1953, that investment had depreciated to $60.7 billion. This depreciated investment, Mr. Farrell said, now has a service life of $36.9 billion.

Approaching the investment situation from the viewpoint of its relation to vehicles in service, Mr. Farrell said that in 1920 the highway investment per vehicle was $400. By the start of World War II, that investment had risen to $1,500, but now it is down to $1,100, which is an indication of how the ground lost during the war years has not been regained.

• **Annual rate of $6 billion**—Asked by R. H. Baldock, chairman of the Highway Research Board, what the annual rate of capital investment should be,

H. S. FAIRBANK received an award.

Mr. Farrell said that current needs would have been met if the program of postwar construction drawn up during the war years had been followed.

In reply to a further question from Baldock as to whether our present annual rate of about $3 billion capital investment is not about half what this country should be spending, Mr. Farrell said that a figure of $6 billion probably was correct, but then qualified that opinion by saying that since the war the nation's total investment in new or rebuilt roads was about half what it should have been. He is not certain that twice the investment made last year is necessary.

• **Meeting critical needs**—Bertram D. Tallamy, in his discussion of how to supply critical highway needs, cited his own state as an example of what steps should be taken. New York has catalogued its needs for main highways, town and county roads, and urban arterials and now has set up a temporary commission to report to the legislature on a financing program to go hand in hand with execution of the long-range program for meeting the catalogued requirements. The cost will be nearly $3 billion.

Toll financing, Mr. Tallamy said, can only meet a part of the need, but should be used where possible. There probably must be new income from taxation. An increase in federal aid is desirable, but at best, federal funds can supply only a small part of any state's total requirements for roads.

Mr. Tallamy is opposed to any expansion of federal highway user taxes, and believes that a study by Congress might show that the federal government should retire from that field, leaving it open to the states.

• **More taxes for trucks**—At one of the later sessions, a paper on studies made to determine how Ohio should finance its needed highway work, D. F. Pancoast of the Ohio Department of Highways predicted that a large part of the needed money would be obtained in the form of taxes on heavy trucks, if other states adopted the Ohio conclusions as to proper allocation of highway costs.

The Ohio study shows that the heaviest truck-tractor-semi-trailer combination is responsible for 87 times as much highway wear and tear as a typical passenger car. In Ohio, those big vehicles now pay less than half what they should under such a cost-tax relationship.

• **Civil engineering lags**—Civil engineering is lagging behind the other fields of engineering and science in its basic research, according to R. A. Morgen of the National Science Foundation, who told the opening session of the HRB meeting of the foundation's current operations. Practice in the field of civil engineering, he said, is far ahead of civil engineering, citing the use of air-entrained concrete as an example. We know that air-entrained concrete is more durable, he said, but raised a question as to whether anyone believed that a physical mixture of air bubbles strengthens concrete.

No one, he added, has set about determining whether possibly there is a change in the chemical characteristics of the concrete because of the greater amount of oxygen resulting from the greater amount of air in the concrete.

• **Fairbank honored**—The Roy W. Crum Award for distinguished service was conferred on H. S. Fairbank, deputy commissioner, Bureau of Public Roads, at the opening session on Jan. 14. This was the first conferring of the award under its new name, which was authorized last year in honor of the late director of the Highway Research Board. It replaces the board's former Distinguished Service Award.

The board's annual award for the best paper submitted at the last meeting went to the three authors of a paper, "Recent Trends in Bond Financing." They are Hugo C. Duzan, William R. McCallum and Thomas R. Todd, all of the staff of the Bureau of Public Roads.

See construction aided by ban of jurisdictional-strike picketing

National Constructors Assn. credits AFL ruling with solving major building problems

Nearly 20 leading companies, specializing in the design and construction of steel mills, chemical plants and petroleum refineries, reported last week that one of their major labor troubles was disappearing fast.

The firms, which comprise the membership of the National Constructors Association, gave credit to the AFL for top-level action in banning the use of picket lines on jurisdictional disputes.

John J. O'Donnell, president of the NCA, said that in the last six months of 1951, members of the association lost 200,000 manhours because picket lines were set up by unions when work they wanted to perform was given to a rival trade. All trades observed the picket lines.

Pre-job conferences and other steps taken by the association to work with labor leaders before work started in an area helped to cut the total of lost manhours to 100,000 in the first six months of 1952.

But, soon after the AFL ban on picketing in jurisdictional disputes, the association stopped compiling statistics on lost manhours because the total was "negligible," O'Donnell said.

• **Stabilized cost?**—O'Donnell, and other members of the association's executive committee, predicted that costs will stabilize—and might even go down slightly.

While wage rates will continue a gradual rise, increased productivity will more than offset the effect of the increases, according to O'Donnell. He said this would be particularly true if construction volume declines, easing the demand for skilled construction workers.

Members of the committee called attention to the fact that because all of the firms operate in highly specialized fields, where they are called upon to design, as well as construct the plant, there is no way of measuring any increased competition among the builders—or determining what effect that would have on the cost of building a plant.

The firms generally work on negotiated contracts. Competitive bidding is the exception, rather than the rule.

• **New markets**—Atomic energy for private industry and further exploitation of coal hydrogenation offer two more construction markets, NCA members said. But they indicated that it is almost impossible to estimate the potential construction market—or the rate at which the market will develop.

At the conclusion of the annual meeting—held in New York—the association re-elected O'Donnell president.

JOHN J. O'DONNELL, NCA president . . . "lost manhours" have been found.

Wild seas batter Redondo Beach, Calif.

Redondo Beach, Calif., has come through the worst hammering of its sea-battered career (ENR June 5, 1952, p. 56) with a combination of high tides and mountainous waves from a storm at sea doing damage estimated by Mayor J. Russell O'Shea at $15 million.

The mayor's estimate probably was high, but there was no doubt about an expensive loss. At least 16 buildings, ranging from single-family homes to 12-unit apartment houses, were damaged in the week-long assault, most of them beyond repair. Streets and sidewalks were undermined, utility conduits torn up, rocks from a seawall hurled ashore, and the revetted breakwater of the city was battered.

By last Wednesday the worst seemed to be over, but there was danger to the city's main outfall sewer in case of any future maulings. The sewer is only 80 ft from the ocean front, and cave-ins occurred within three feet of it when seas flooded as far as 200 ft inland.

City officials were frantic. Mayor O'Shea sent an appeal to Congress for federal relief and made a flying trip to Sacramento for state aid, asking the governor to declare the city a disaster area.

Between high tides, the city continued to pile rock to reinforce the seawall along the 7-block stretch that gets the brunt of the attack, but this was largely a futile gesture, and what could be done immediately was a problem.

The city council heard James E. Durham, engineer with the Los Angeles District Office of the Corps of Engineers, put the blame where it had been put before, on the 1,500-ft stone breakwater that Redondo built in 1939 as the starter on a small-boat harbor.

Cofferdam breaks earlier than expected

A 40-ft-high earthfill cofferdam at Folsom Dam (ENR Dec. 4, 1952, p. 39) on the American River in northren California burst Jan. 9 under pressure from heavy rains, causing damage estimated in excess of $350,000.

Failure of the barrier had been anticipated and most of the equipment was moved out of the way, but the Sacramento district Corps of Engineers had hoped it would hold until later in the winter.

J. R. Morton, chief construction engineer for the district, explained that if the dam had held for two more weeks work would have reached a point where damage would have been minor and months of progress gained.

The structure had been used to divert the river through a 1,000-ft tunnel while concrete pouring proceeded on the base of the dam. The break halts construction in this phase of the contract until early summer, when the barrier can be rebuilt.

A preliminary examination by Army Engineers and officials of the Savin Corp. of Hartford, Conn., and Merritt-Chapman & Scott, joint contractors handling the $29,444,000 contract, showed two sections of trestle, containing 700 tons of steel, two pumps worth $13,000 each and 45,000 ft of lumber were lost in the flood.

Downstream from Folsom Dam, the Bureau of Reclamation's cofferdam protecting the construction site of the Folsom power plant was slightly damaged.

However, Nimbus Dam and power plant, being constructed by the bureau 7 mi below Folsom Dam, was not harmed by the surge of water.

The corps said pouring of concrete and work on Folsom Dam above the water level will continue through the winter months.

NPA starts new year without backlog; fills second-quarter steel needs

Material supplies are opening up fast. NPA found that out a month ago when it took stock of its steel allotments for the second quarter of 1953. Every construction application on hand before Jan. 1 got its full allotment for the second quarter.

NPA's construction bureau thus started the new year with a clean slate. Every application had been filled for the second quarter of 1953. All types of projects in the files—even the recreational and entertainment jobs—received CMP tickets for the steel and other material requested for the second quarter.

Since Jan. 1, only about 25 new applications have come in and are now pending. They won't be acted on this month. After filling every request on the books, the construction bureau had a small reserve left. It is holding that reserve—to take care of disaster and emergency needs—at least until the end of January.

• **Commercial allotments**—With advance allotments to projects added on, the NPA Facilities and Construction Bureau had a total second-quarter quota of structural steel of 241,000 tons to dispense (ENR Jan. 8, p. 23). After taking care of all requests for defense and defense-connected projects, the bureau was able to give 89,000 tons to its construction controls division for commercial, residential and entertainment jobs.

About 30,000 tons had been already assigned to commercial and residential in advance commitments for the second quarter. That left 59,000 tons for new second-quarter allotments.

With that much structural steel to distribute, the construction controls division was able to fill every request that had fallen into its files since March, 1952, even including the recreational-amusement projects that had been banned until Jan. 1 of this year.

Controls officials thought that with the lifting of the ban these entertainment projects should get the steel they had been waiting for. As the division had the steel to give, it filled every request.

• **New boss**—There were changes in the top personnel of the Facilities and Construction Bureau on Jan. 1, too. Rufe B. Newman quit as NPA deputy administrator heading the bureau but stayed on with the Commerce Department in charge of its Jacksonville, Fla., office. Jacksonville is Newman's home city. As part of his new job, he will handle all questions in his area on CMP Reg 6 (construction).

To fill Newman's place, Stephen W. Burns moved up to the post of acting assistant administrator running the bureau's affairs. Because of a legal quirk, Burns won't assume the full title of NPA assistant administrator until March.

In another step-up—to fill Burns' former position — deputy director Henry L. Badoux now heads the construction controls division. He will take the title of director in March, when Burns acquires his full rank.

Raise steel limitations to aid highway work

All highway jobs will soon get more help on structural steel.

NPA is issuing an amendment to CMP Reg 6 allowing each highway project in the nation to self-authorize 25 tons of structural shapes per quarter.

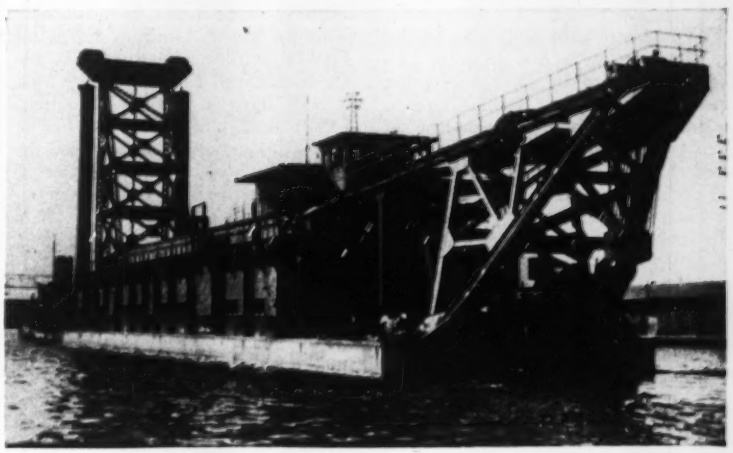
Note that this increased amount is good for every quarter; it goes far beyond the current per-project limitation. Present rules allow self-certifying of only 12 tons of structural steel per highway project—and that means for the entire life of the particular construction job.

Highway construction for the second quarter of 1953 is in much poorer shape on structural steel than is building construction. DPA allotment of structural tonnage for building construction in the second quarter came within 10 or 12% of the total requirements submitted by the NPA Facilities and Construction Bureau.

But—for all highway projects in the United States—the Bureau of Public Roads received only half of its second-quarter structural steel requirements. It got 185,000 tons instead of the 370,000 tons needed. The allotment of steel plate also was about 50% short of requirements.

Big turnpike and expressway projects would absorbe the entire allotment if BPR filled the needs for those jobs first. Naturally, the agency doesn't do that; it tries to distribute the allotted steel equitably among all projects to keep the work going on an economical schedule.

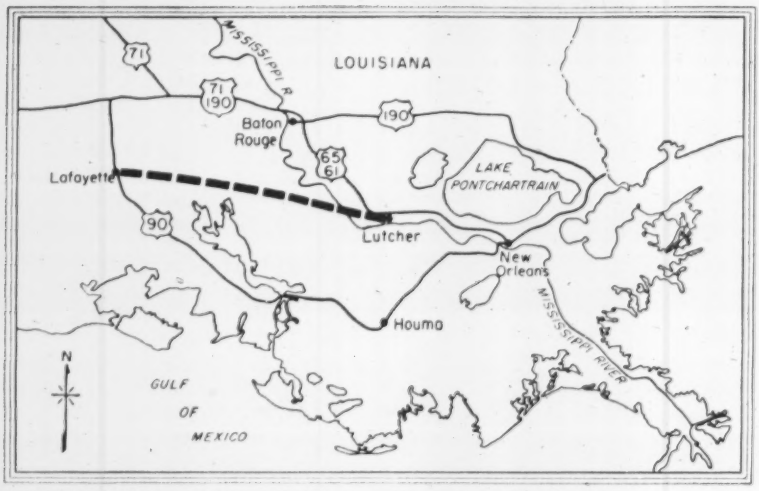
NPA's new order giving more self-certification rights to highway jobs will help many of the smaller projects. There are large numbers of county, municipal and state projects that can go ahead on an orderly construction schedule with 25 tons per quarter of structural steel.



Starts dredging the St. Lawrence

The world's largest hydraulic pipeline dredge "Hydro-Quebec" has started deepening and widening the 15-mi Beauharnois Canal between Valleyfield and Beauharnois. The purpose of the project is to provide more water to operate the expanding facilities of the Quebec Hydro-Electric Commission. When completed, its Beauharnois installation will be the largest single site hydroelectric plant in the world, producing more than 2,000,000 hp.

The canal eventually will direct practically the entire flow of the St. Lawrence River. Included in its 3,300-ft width is a navigation channel 600-ft wide and 27-ft deep, which will permit passage of ocean-going vessels. Provision has been made to install locks which will make the canal an integral part of the proposed St. Lawrence waterway system.



80-MILE FOUR-LANE HIGHWAY (dotted line) planned by Louisiana.

Louisiana road, bridge work spurts

Toll highway, Mississippi bridge and causeway to cost $210 million; early starts expected

Louisiana is priming for one of the largest bridge and highway programs in its history. Involved is expenditure of $210 million for a new toll highway, a new bridge across the Mississippi River, a causeway across Lake Pontchartrain, and other highway projects in the New Orleans area.

• **Toll highway launched**—The last of five contracts with five separate parishes was signed by the engineering firm of Palmer and Baker, Inc., to design and supervise construction of an 80-mile four-lane toll highway between Lutcher and Lafayette.

The highway would start on the Air Line Highways near Lutcher, and roll through bayou country, bridging 17 navigable streams. When completed it will chop about 46 miles from the present distance from New Orleans to Lafayette via U. S. Route 90 (see map above).

The project is to be financed by revenue bond issues by the five parishes (counties) embracing the expressway.

• **Causeway progress**—Already under way under contracts between Palmer and Baker, and two parishes involved, is engineering and laboratory work preliminary to start of construction on a 22-mi toll causeway across Lake Pontchartrain.

It will be financed by a $40-million bond issue already authorized by parish voters. The bonds will not be used to finance access highways; these will be state projects.

Engineers estimate that the project should be ready to advertise for bids by June of this year. Construction is expected to be completed about two years thereafter to serve the summer traffic of 1955.

• **Bridge advances**—The Mississippi River Bridge Authority at a meeting last week made public its recommendations for a $48.8-million bridge with 1400-ft cantilever channel span across the Mississippi River at New Orleans. It will have a vertical clearance of 135 ft at high water.

The project will be financed by a bond issue backed by tolls. The state highway department will construct approaches for the new bridge with state money.

The authority's action offered a compromise between highway department plans for the bridge and objections by the board of commissioners of the Port of New Orleans. In response to the objections, the authority agreed to eliminate a pier approximately 200 ft off the west bank of the river. This alteration added about $4.7 million to estimated costs.

Army Engineers have withheld a decision on the structure, pending the authority's recommendations.

• **Other projects**—In active planning stages are: (1) an $18-million elevated expressway from the eastern terminus of the bridge to a point near the new Union Railroad Station where it will connect with projected expressway routes to the causeway and to the Air Line Highway; (2) about $12 million worth of approaches to the western terminus of the bridge which will tie in with a new four-lane highway through the industrialized west bank of the river and will include a tunnel under the Harvey Canal.

In addition to the bridge, causeway, approaches and access roads, New Orleans area work calls for a $6-million improvement job on Highway 11 between LaPlace and Ponchatoula along the western end of Lake Pontchartrain and a new highway along the shore of the lake in New Orleans.

Jefferson Parish recently has announced approval of a contract, also with Palmer and Baker, covering engineering costs for construction of a 10.5-mi veterans memorial highway to run from the Orleans-Jefferson line to the Jefferson-St. Charles Parish line. Construction is expected to start next month.

DISCUSSING PLANS for the new Mississippi River Bridge are: (left to right) Capt. Neville Levy, chairman of the Mississippi River Bridge Authority; George S. Covert, director of the Louisiana State Highway Department; Frank X. Armiger, authority administrator.

Power firms challenge REA loans to co-ops as bypassing Congress

Lending of funds to build dams for lease to SPA weakens lawmakers' purse grip, companies say

The government's dwindling rural electrification program faces a major test in a court case handed to Federal District Judge Charles F. McLaughlin in Washington last week. The decision may take a month or more to write.

The outcome of the case could determine the scope of future construction to be financed by the Rural Electrification Administration. So broad are the issues presented to Judge McLaughlin that his decision could curtail several of the functions which REA now performs.

The main issue is whether rural generating and transmission cooperatives may obtain REA loans to finance facilities which are, in turn, leased to another federal agency. Directly under attack is a series of contracts among REA, five rural cooperatives and the Southwestern Power Administration, which markets power from government dams which are located in the Southwest.

Nine Missouri electric companies, headed by Kansas City Power and Light Co., contend the contracts are merely a clever method of bypassing Congress' authority over spending. The effect of the contracts, say the companies, is that REA loans are used for the express benefit of SPA, which gets facilities Congress refused to provide through direct appropriations.

Government lawyers reply that the contracts are in line with established administrative policies; the Congress is well aware of such policies and there is no attempt to exceed the authority granted under the law to REA and SPA.

• **Contracts involved**—REA loan contracts totaling some $51 million are involved in the complicated court suit. Facilities financed by the loans include one 10,000-kw diesel electric plant near Poplar Bluff, Mo., one 15,000-kw steam electric plant near Chamois and one 40,000-kw steam plant near Missouri City. Transmission facilities include two 154-kv lines from the Bull Shoals reservoir in Arkansas to the steam plants and various 69-kv lines radiating from the higher voltage lines out to the member co-ops.

The Missouri City plant is about 35% complete and the Chamois plant about 85% complete. The transmission facilities of the co-ops range from 5% to 90% of completion.

• **Broad effect**—Lawyers acquainted with the case differ widely as to the effect the decision may have on this construction. The best guess appears to be that the most adverse decision would not halt completion of facilities in which there is already substantial investment. Even if existing contracts were declared illegal, it is believed that most of the facilities could and probably would be built.

However, Judge McLaughlin has a broad area in which to frame his decision. He may declare the contracts legal and thus endorse REA and SPA practices. He may declare them illegal and order different contracts to be drawn up, or he may find certain provisions of the contracts illegal, and order corrections. His decision could include an injunction halting some of the work under way or, in the most extreme instance, all of the work now under way to support their main argument. The companies charge the contracts violate the rural electrification law because:

• They would provide service to customers who already have central station service available.

• They would provide service to areas which are not "rural" as defined in the act.

• In effect, they provide that an REA loan is made available to a federal agency.

• Loans made are not self-liquidating, but are repaid by another federal agency.

SPA, the companies contend, has exceeded its authority under the flood control act in that it has:

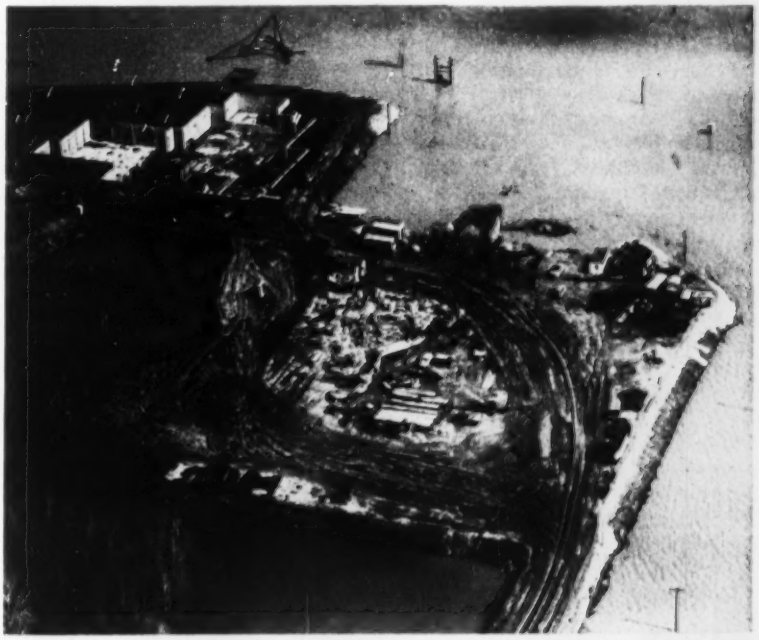
• In effect acquired generation and transmission facilities with funds other than those directly appropriated for this purpose by Congress.

• Purchased power and energy from the co-ops.

In any event, it's certain that a decision unfavorable to REA would tend further to curtail that agency's loans for generation and transmission facilities.

The case argued last week is a portion of the even broader court action instituted by the power companies in 1950. Original suit sought action to enjoin the government agencies from "carrying out an alleged plan or conspiracy . . . to use REA funds to construct . . . facilities which would duplicate plaintiffs' facilities, deprive plaintiffs of existing and potential customers and extend the electric utility business of SPA into plaintiffs' service areas."

Courts twice turned down government pleas that the charges be dismissed without trial. On May 1, of 1952, a district court in Washington ordered a separate trial on the legality of the contracts, leaving the conspiracy charge to be disposed of at a later session.



ONE OF THE TWO steam-electric power plants involved in the case is this $12-million, 15,000-kw plant under construction near Jefferson City, Mo.

Push two skyscrapers for Dallas business

The skyline of booming Dallas, Tex., will have undergone a radical change by the end of 1954, it became apparent last week, as plans for a new 47-story, office skyscraper were announced.

Another major addition to the city's office space is already beginning to show, as steel erection progresses for the 36-story Republic Bank Building on Ervay Street. The city's tallest building at present is the 30-story and penthouse Mercantile Bank Building, which carries a tall radio antenna spire.

• **Tall and narrow**—Expected to cost more than $10 million, the 47-story office building will be known as the Corrigan Building, and is to be built by Leo F. Corrigan, a Dallas developer whose holdings include the Hotel Adolphus, which will adjoin the new structure.

The building is planned for a relatively small lot (73 by 103 ft), and thus will be a tall, slender structure providing 325,000 sq ft of net rentable space. Two faces of the building —on Main and Akard Streets—will be glass-enclosed, for the entire 547 ft of their height, to the flat roof. The other two sides—which will face the Adolphus Hotel—will be faced with brick up to the 26th floor, then glass-faced for remaining floors.

The building will have a welded-steel frame and a patented corrugated-steel deck system, covered by lightweight concrete. All floors, and three basement floors, will be air conditioned, with part of the conditioning equipment in the basement, and part on the roof.

Architect for the building is Wyatt C. Hedrick.

• **Bank building**—Ground was broken for the Republic Bank Building (ENR July 13, 1952, p. 26) in November, 1950, to prepare for an excavation measuring 78 ft deep at its deepest point.

The building will cover 43,000 sq ft, on the ground, the first five stories being largely devoted to the bank and its functions, and then will carry an 82 x 154 ft office tower up to its full height.

It is planned to top the structure with a slim steel spire that will bring the height to 598 ft above street level, although the spire will not represent usable office space. There will be four basements.

Architects for the building are Harrison and Abramovitz of New York City, and Grayson Gill and George F. Harrell of Dallas. General contractor is J. W. Bateson & Co., Dallas.

Noted briefly . . .

• **Roads in the news**—Financing continued to lead the problems of the states in considering their highway problems, but there were other matters as well:

In Colorado, Governor Thornton called for use of anticipation warrants, based on future highway tax revenues, as a means of providing funds for highway improvements. In Kentucky, the Louisville Automobile Club used a radio broadcast to argue against any increase in the state's present 7-cent gasoline tax.

Ohio was having further trouble with its road program—a taxpayers' association recommended approval of raises (1½ cents) in gasoline taxes and (3 cents) in diesel fuel taxes to bring in additional $15-million revenue a year; the state's turnpike commission found that property owners are preparing to go to court rather than accept offers for right-of-way land.

• **Spending curb**—A bill to fix specific spending ceilings on the various parts of U. S. construction projects (as opposed to a single total project authorization) seems set for speedy approval in the House. Rep. John Saylor sponsors the bill, designed to give Congress closer control over spending, by putting an over-all dollar limitation on projects, and limitations for each section of the contract.

• **Begin Weber Basin work**—Official start of work on the Bureau of Reclamation's $2.5-million Cateway Tunnel—part of the $68.7-million Weber Basin project in Utah—started Jan. 9 with firing of an explosive charge to start the 3.3-mile tunnel. Under discussion for more than 20 years, the project will bring waters of the Weber River (near the town on Uintah) through to the west side of the Wasatch Mountains, to irrigate land and provide culinary and industrial water. Utah Construction Co. is the tunnel contractor.

Road test data distorted, truckers say

The Maryland Road Test, which was run in 1950 by the Highway Research Board, came back into the spotlight again last week as a result of a suit brought by the Pennsylvania Motor Truck Association against 31 railroads and Carl Byoir and Associates, public relations counselors for the Eastern Railroad President's Conference.

The suit seeks to collect $250 million in damages for a "campaign of vilification and slander." It seeks also to have the court restrain the railroads from issuing "defamatory matter to public officials or the press" without disclosing that it was prepared by the railroads.

The suit was brought in the federal court in Philadelphia. Among charges against the railroads and their public relations advisors is one that the Byoir firm bribed Clinton M. Johnson, public relations director for the Maryland State Roads Commission, in return for which bribe Johnson "agreed to and did in fact publish a misrepresented and distorted" description of the results of the Maryland Road Test.

The Maryland Road Test was run in 1950 (ENR Nov. 2, 1950, p. 25) on a mile-long section of concrete pavement on U. S. 301 near La Plata, Md., loads employed were 18,000 lb and 22,400 lb on single axles and 32,000 and 44,800 lb on tandem.

Visitors were not excluded from the test road and so, despite plans not to release information concerning the test results until completion of the test program, reports of damage being done to the pavement by the heavier trucks, with pictures, began to appear in local papers and were widely published throughout the country.

The Pennsylvania Motor Truck Assn., in its suit against the railroads, charges that this unfavorable publicity resulted in a veto by Pennsylvania's governor, John S. Fine, of a bill that would have given truckers in Pennsylvania "weight allowances close to parity with surrounding states."

The final report on the Maryland Road Test was not made public until last year (ENR May 22, 1952, p. 80). It showed that poor subgrade and overloading were responsible for most of the much-publicized damage. The part of the test road that did have a good granular subgrade was the part on which the 18,000-lb and 22,400-lb axle loads were operated. No serious damage was done there by the 18,000-lb loads, but some was done by the 22,400-lb loading. The serious damage was on the sections having poor subgrade and where the loading was well above that for which the pavement was designed.

NATIONAL INDUSTRIAL RELATIONS CONFERENCE was addressed by (left to right, above): Hoyt P. Steel, Benjamin Electric Mfg. Co.; Thurman Arnold; Carroll E. French, industrial relations counselor; Joseph Shister, University of Buffalo (speaking); L. William Horning, New York Central; Joseph Moody, Southern Coal Producers Association; and others.

Trends in labor relations are mapped at meeting

House Labor Committee head predicts new bill will permit return to free collective bargaining

Construction and other industries can expect less government intervention and a request for more money under the guise of fringe benefits, in dealing with labor in the year ahead.

These were the opinions of some of the country's top labor experts at the National Industrial Relations Conference held last week in Cleveland, Ohio. The meeting, attended by 1,000 executives, was sponsored by the U. S. Chamber of Commerce.

The prediction that there will be a return to the system of free collective bargaining was made by Representative Samuel K. McConnell, Jr., slated to head the powerful House Education and Labor Committee in the 83rd Congress.

"The primary legislative matter to be considered by my committee will be labor-management relations in general and the Labor Management Act in particular," McConnell said.

• **Consideration**—After hearings scheduled for February, testimony will be analyzed and a bill will be written to change the law in light of the facts. Matters requiring consideration are:

• Closed shop: "There are certain industries where the present act's provisions have aroused strong objections, notably in the building and construction, maritime, and printing fields. Proposals have been made to cut down the time required to join a union, where a union-shop agreement is in effect, to a period of seven days or less. Whether that is a correct or sound solution of the problem, I am not prepared to say at this moment." Management and labor should be free to reach a closed-shop agreement, if they wish, however, he said.

• Secondary boycott: "I think the first requirement should be to understand thoroughly what is included in the term, and then to find out where there is agreement on a solution."

• Injunctions: "I agree that a further effort should be made to protect labor against unjust and unfair use of the injunction.

"However, I do not see at this moment how anyone could expect the elimination of the possible use of an injunction, with equitable safeguards."

• National strikes: "I anticipate greater and more intensive study of this problem than on any other question. The President could have available several discretionary procedures rather than . . . a rigid formula."

• **Fringe benefits**—Speaking on "A Long-Range View of Fringe Benefits" was Richard P. Doherty, former industry member of the WSB, and director of employer-employee relations, National Association of Radio & Television Broadcasters.

Doherty predicted a runaway of fringe benefits in the next 24 months, if the current labor pattern continues. He said that fringe benefits at present aggregate close to 20% or 32 cents an hour in industry.

"The year 1953 will be one of substantial demands in fringe benefits. I believe we will find unions demanding them industry-wide and we may witness the spread of union-operated benefit plans."

• **Manpower policies**—Willis H. Hall, of the National Labor-Management Manpower Policy Committee and secretary of the Detroit Board of Commerce, who was formerly in the construction business, discussed the manpower problem.

Urging the development of manpower needs at the more effective local level, Hall predicted no change in manpower policies because holdovers from the last administration will be frozen in their jobs by Civil Service.

In speaking of the shortage of engineers, Hall suggested: better use of engineers by re-evaluation of jobs; shorter college terms for engineers; interesting high school students in engineering and providing easier transfers among engineering colleges.

• **Controls**—The present wage stabilization program has failed and must be scrapped because it has not stopped inflation, said Robert C. Bassett, labor counsel for Hearst newspapers and former industry member, WSB.

"The government has groveled before the strike threats of big unions and both government and the board have considered small business a nuisance," he said. WSB policy forced

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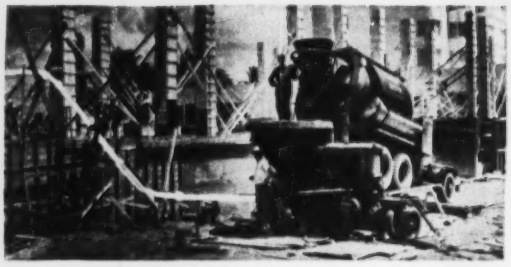

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SAMUEL K. McCONNELL: "Management and labor should be free to reach a closed-shop agreement . . ."

LAURENCE E. LEE: "Monopolistic practices by either labor or employer call for legal controls."

LEO WOLMAN: "Bring unions back under anti-trust laws." (Robert C. Bassett, background.)

bargaining into certain channels, such as health and welfare.

Bassett suggested that if there is a new board, it should be of all public members and quasi-judicial, not tripartite.

Discussing what should be done about wage controls he indicated these measures:

- Wage, and most price, controls should be suspended immediately.
- No stand-by control program.
- Start afresh if wage controls are needed.

• **Keynote**—Laurence E. Lee, president of the U. S. Chamber of Commerce, sounded the keynote of the conference.

Lee told his audience to stress voluntary action as the fundamental approach to harmony and equity in relations between labor and management. Reliance on government has weakened the institution of free collective bargaining.

"Monopolistic practices by labor organizations or by employers call for legal controls. Wherever industry-wide bargaining assumes such proportions that either the employer or union can exercise monopolistic power, it ought to be regulated by law," Lee said.

"The new administration will be more receptive to the business point of view. That is certain. Business can look to the new Congress with the confidence that our point of view will be equitably received," he added.

• **Panel discussion**—A panel discussion, moderated by Carroll E. French, director, Industrial Relation Counselors, Inc., New York, saw these views expressed on "Monopoly Power in Collective Bargaining":

- Thurman W. Arnold, former New Deal trust-buster, saying his views of 10 years ago have changed because of events—thought probably labor should be brought back under the anti-trust laws. Speaking of big versus little unions, he cited a building trades case in Chicago, where hodcarriers boycotted Redy-Mix Concrete workers.
- L. William Horning, vice-president, personnel and public relations, New York Central System—"Legislation of some kind is necessary to control union power for the national welfare." He pointed out that monopoly power should not be confused with industry-wide bargaining. While railroads are legally required to provide public service, the same does not hold for unions.
- Joseph E. Moody, president, Southern Coal Producers Association—"There is no law to brake the power of the international unions; what is needed is equality under law, or in other words, equality of management and labor, letting the economic tides take care of the situation."

Since industry-wide bargaining does not exist, he said, legal barriers against it would be futile.

- Joseph Shister, chairman, Department of Industrial Relations, School of Business Administration, University of Buffalo—"Monopolistic power of unions is a serious question and one that cannot be solved by attacking industry-wide bargaining. The solution lies in attacking specific abuses." Citing past government action against the holding companies, he asked why the same cannot be done with unions.
- Hoyt P. Steele, vice-president, Benjamin Electric Manufacturing Co., Des Plaines, Ill., suggested a balancing of monopoly power by legislation. Industry-wide bargaining is not evil, but union control of bargaining leads to monopolistic practices. Steele, who has 400 employees, spoke from the standpoint of the small businessman.
- Leo Wolman, Professor of Economics, Columbia University, told the closing session of the conference that legal action curbing monopoly powers of the large unions is impracticable. "There has been too much subordination of the state to federal power in regulation of labor abuses."

Wolman suggested two remedies: bring the unions back under anti-trust laws; government outlawing of compulsory union membership.

Nevada union leaders fight 'right-to-work' law

An initiative petition seeking repeal of the so-called "right-to-work" act adopted by Nevada at the November election was filed recently in the office of Nevada Secretary of State John Koontz by labor union leaders.

Although Koontz was required by Nevada law to submit the repeal petition to the 1953 legislature, the state constitution provides that such acts as the "right-to-work" measure cannot be annulled, amended or repealed for at least three years.

Koontz said that if the legislature fails to act on the repeal petition or rejects it, the next requirement is that it be placed on the 1954 ballot. The new Nevada "right-to-work" act outlaws all forms of compulsory union-membership contracts.

Stop-strike move called violation

NLRB decision labeled Austin Company's firing of three guards to prevent a strike a T-H violation

The National Labor Relations Board has ruled that the Austin Co., a construction firm, and a labor union violated the Taft-Hartley law by removing three Pinkerton detectives from a project in Los Angeles.

The Austin Company bowed to demands by the AFL hodcarriers to avert threatened labor trouble at its big Ford Motor project. The company canceled a contract with the Pinkerton Detective Agency for the detectives because the union protested that the guards did not belong to the right union.

So Austin avoided a crippling strike but the NLRB, on a complaint by one of the Pinkerton guards, now has ruled that Austin and the union violated the Taft-Hartley law by removing the Pinkertons.

PAUL M. HERZOG, NLRB Chairman, signed the Austin decision.

• **Arguments**—Austin did not pay, assign or direct the work of the guards. The Pinkerton Agency exercised all the usual employer functions. Austin argued, therefore, that it could not have violated the act since the guards were not its employees.

That is the contention that went before the NLRB, and Austin submitted its opinion that it was a resonable one.

But the NLRB ruled that Taft-Hartley forbids job discrimination on the basis of union membership by any employer against any employee. Even though there was no direct employer-employee relationship present, said the board, Austin, together with the Pinkerton Agency controlled the guards' right to work and used that control to encourage union membership.

The board said that while some provisions of the law relate only to the employer's own employees, the section forbidding discrimination literally applies to any employee.

Just how far NLRB will go with this interpretation of the law isn't clear. The Austin ruling specifically does not attempt to set out what degree of association there must be in order to find illegal discrimination against employees of another employer. The Austin ruling seems to rest mostly on the usual facts of the case, because the board specifically rejected the reasoning of its own trial examiner that coercion of any employee is—per se—an unfair labor practice.

Licensing of operators

A proposal has been made in Washington, D. C., to license operators of bulldozers, graders, loaders and similar mechanical equipment. Proponents of the proposal said that high skill and experience is required of an operator and an unqualified operator is a danger to himself and to the public. Paving contractors argue that licensing requirements would increase costs since licensed operators would expect better pay.

A-plant and power projects may avoid labor pinch

The Labor Department said recently that it doesn't expect any manpower tightness in the Portsmouth, Ohio; Cheshire, Ohio; or Madison, Ind., areas until about April, if then. Portsmouth is the site for a new A-plant (ENR Oct. 16, 1952, p. 22). Cheshire and Madison are areas where new power plants to serve the A-plant are planned. In a way these communities will become plant "satellites."

• Portsmouth has been a heavy labor-surplus area for the last decade. Only about 500 have been hired there so far for AEC work; Labor Department expects many people to move into the area, too, as they learn about the job and its opportunities.

• Cheshire is also a heavy labor-surplus area. It is right across the river from Point Pleasant, W. Va., which is in Labor Department's highest manpower surplus classification. Cheshire is in an agricultural county; the whole area is rather sick economically.

• Madison has less labor available than the other two areas. While no pinch is expected there, Madison is a moderate surplus or almost balanced labor-supply area.

Under the Davis-Bacon Act, Secretary of Labor Tobin established pay rates for the Portsmouth project. The Madison and Cheshire projects are not being built by AEC, but by private money, so Davis-Bacon machinery will not be used to set rates there.

Striker against TVA loses fight for wages

Cohen W. Williamson, a union member who struck against the Tennessee Valley Authority, has lost his fight in a federal court for wages he claimed from the authority.

Williamson was a member of the AFL machinists which struck against TVA following a jurisdictional dispute between the machinists and the operating engineers in June, 1951.

Originally 64 other former employees of the TVA had complained.

The judge's ruling said that Williamson's position was untenable. "It is clear that the plaintiff engaged in a strike against his employer, the TVA, a government-owned corporation."

The judge also ruled: "The court is of the opinion that the defendant (TVA) is prohibited by law from paying to the plaintiff any wages as sued for in this action, by reason of the plaintiff having unlawfully engaged in a strike against the government."

Construction force declines

Construction forces of the Atomic Energy Commission's Savannah River plant reached the peak figure of 38,223 on Sept. 30 last year, according to AEC announcement.

Construction work will continue on a large scale for some time, although current construction employment numbers 31,000. The du Pont operations force (2,738) and Atomic Energy Commission personnel (240) bring total plant employment figures to 33,978.

Although du Pont plans expansion of its operations force to an eventual 7,000 workers, the total plant employment at Savannah River project is expected to be decreased to 32,000 by July, 1953.

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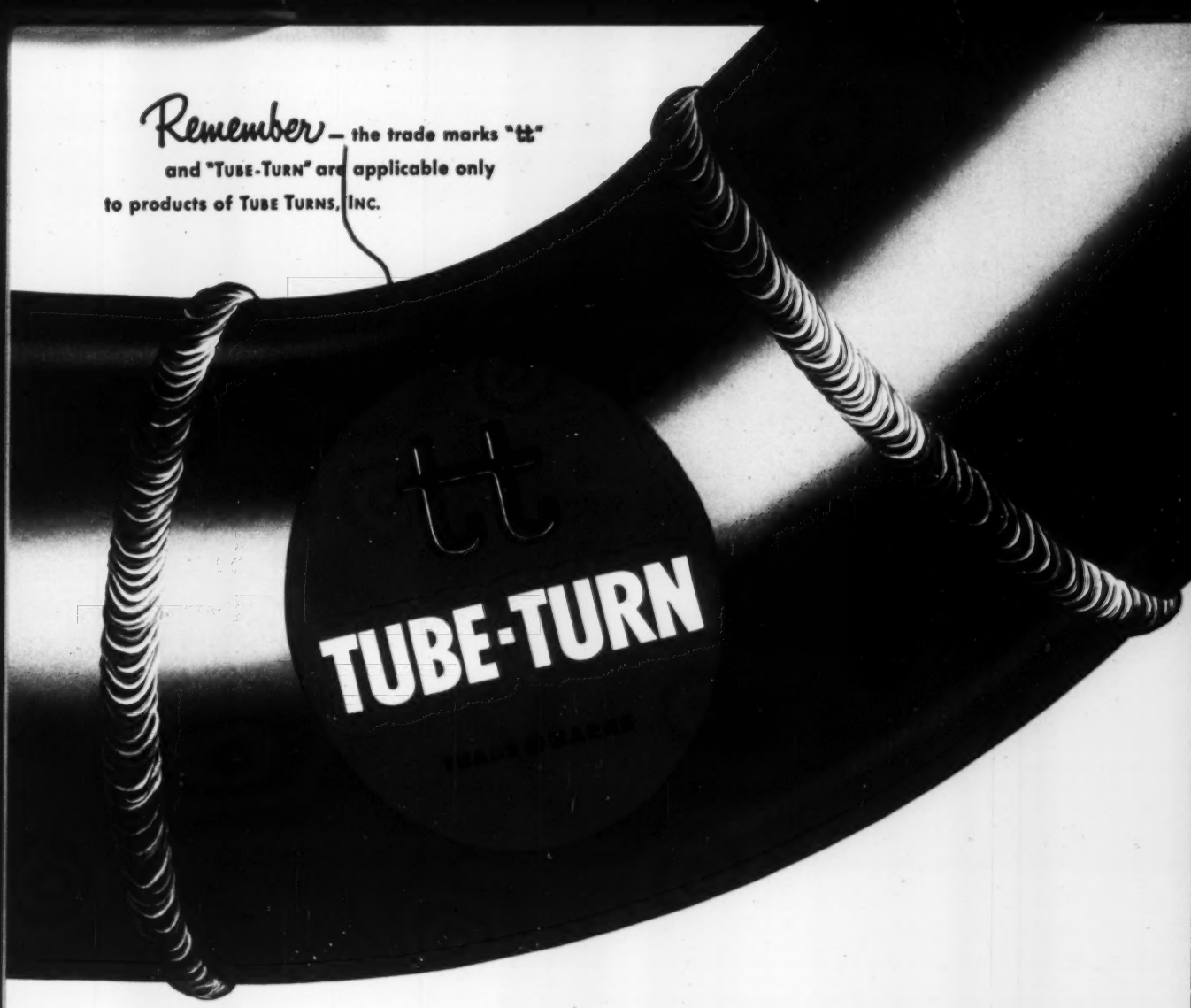

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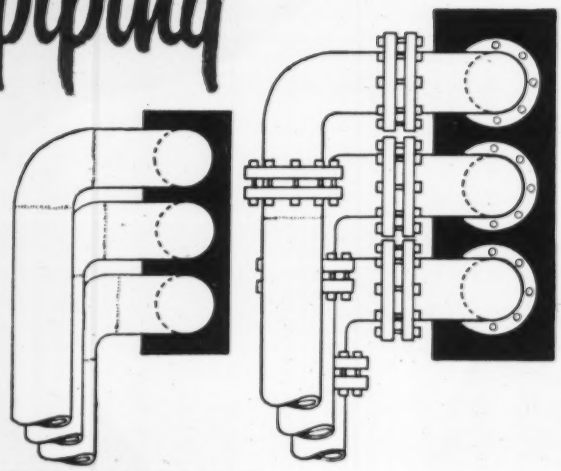
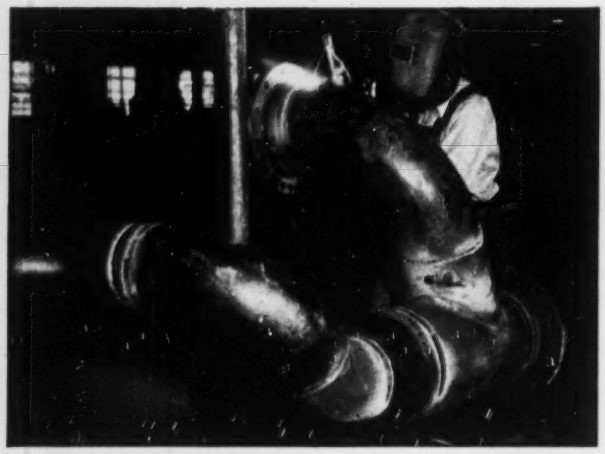


Example: **The welded assembly on left takes a third less space than comparable flanged assembly.**



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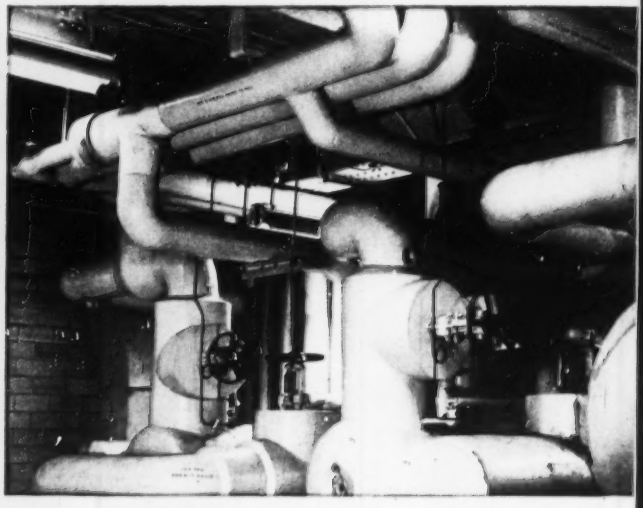

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CONCRETE FACING for Bear River Dam is placed on carefully laid rubble masonry. Unreinforced concrete beams back up the joints to facilitate construction, permit joint movement and check leakage in case of partial joint failure.

Renaissance in rockfill dams

L. L. Wise
Associate Editor

RECENT DEVELOPMENTS in design and construction of rockfill dams are emphasized in three such structures built in 1952. These are Aluminum Company of America's Cedar Cliff Dam in North Carolina, Aluminum Company of Canada's Kenney Dam in British Columbia, and Pacific Gas & Electric Company's Bear River Dam in California.

Two distinct types of rockfill dams are represented in the current construction. Cedar Cliff and Kenney Dams each have a sloping impervious rolled-clay core. Bear River Dam, on the other hand, has a concrete slab face.

• **Western type** — Rockfill dams are generally conceded to have had their origin during the days of the California gold rush of a hundred years ago. Their primary advantage is one of economy, in that local materials, if suitable, can be used. The 25 now in service in California form the greatest concentration of such structures in the world. This group includes dams that were built in the 1880's.

It is not certain which dam held the early height record. But most authorities agree that Dix River Dam, completed in 1925 for the water supply of Danville, Ky., set a new record of 275 ft above foundations. This record was broken in 1931 by Pacific Gas & Electric Co.'s Salt Springs Dam that set a record height of 328 ft not yet surpassed.

Of the 25 rockfill dams in California, 12 are on the Pacific Gas & Electric Co.'s system. Most noteworthy is Salt Springs Dam, but the new Bear River Dam (completed in October, 1952) includes many improved features. All of the PG&E structures are faced with an upstream impervious layer of concrete, timber or gunite. In the course of building and maintaining these dams, PG&E, under the direction of its recently retired chief engineer, I. C. Steele, has contributed greatly to the knowledge and development of the concrete-faced dam.

• **Sloping core development**—As compared with concrete-faced structures, the rolled-sloping-impervious-core type is of fairly recent origin. One of the early structures of this type was Nantahala Dam in North Carolina, completed in July, 1942, by the Nantahala Power & Light Co., a subsidiary of the Aluminum Company of America. Largely responsible for the development of that type of structure is J. P. Growdon, retired chief hydraulic engineer of the Aluminum Company of America.

Primary advantage of the sloping-core type as compared with the faced type is that the flexible core is not subject to cracking because of continued settlement of the rockfill.

Growdon's development of this type was based on observation of the many lakes in the United States and Canada formed by glaciers. He noted that terminal moraines filling up old stream beds made effective dams. These natural dams generally consist of coarse gravel with progressively finer material upstream sealed at the upper surface by glacial silt. Most of them are surprisingly watertight and have functioned for thousands of years.

Growdon concluded that it should be feasible to use similar technique in a man-made structure. Study indicates that a suitable filter just downstream of the impervious core would protect the core from moving through the rockfill. Further, a reverse filter on the upstream side, covered with rock, would protect the earth core from wave action and sudden drawdown.

These techniques subsequently were applied in the construction of Nantahala and Glenville dams in North Carolina and later in construction of two other dams of the same type: Queens Creek, completed in 1949, and Cedar Cliff completed in April, 1952. A third, Bear Creek Dam, near Asheville, N. C., is under construction.

• **Advantages of rockfill** — The distinguishing characteristics of rockfill dams, according to Mr. Growdon, are as follows:

(1) The load from the weight of the rockfill and from the water is transmitted directly to the foundation. The load on the foundation varies smoothly from the maximum

NEWEST ROCKFILL DAM is Kenney Dam on the Nechako River in British Columbia completed Nov. 28, 1952. This 317-ft high sloping impervious core structure is a key element in the Aluminum Company of Canada's British Columbia project.

to the minimum. There is no abrupt differential foundation loading.

(2) The body of the basic rockfill downstream from the impervious section is DRY. No hydrostatic pressure can possibly be built up in it. This is of vital importance in resisting earthquake and bomb shocks. The energy of the shock is absorbed in a relatively short distance by breaking down points of contact between the rocks of the fill, thus the area affected by the shock is strictly limited.

These two characteristics are true for a rockfill dam with a concrete impervious face, as well as for a rockfill dam with a flexible earth impervious section.

The essential difference between a concrete impervious membrane on the upstream face of a rockfill and an earth impervious section on the upstream face of the fill, in Mr. Growdon's opinion, are:

(1) The earth section is entirely flexible and will adjust itself to settlement or other disturbance of the supporting rockfill, so that leakage does not increase with the passage of time.

(2) The material composing the earth impervious section is the end result of the process of disintegration and no further change can be expected even in geologic time. The filter material and the rock used in both types of rockfill dams will continue to disintegrate and settle. This process is so slow that the rate of disintegration should be measured in geologic rather than in historic times.

The concrete impervious face is essentially a rigid member that will crack and permit increased leakage as a result of settlement of the supporting rockfill. The relatively thin concrete membrane is subject to deterioration resulting from the water pressure forcing small amounts of water through the concrete. In the course of time (perhaps a hundred years, perhaps 500 years, depending upon the quality of the concrete) this will disintegrate the impervious membrane, so that it must be replaced.

(3) The rockfill with an impervious earth section on the upstream face requires no maintenance in the foreseeable future. All rockfill dams with concrete impervious membrane do require maintenance at frequent intervals, which necessitates emptying the reservoirs.

Engineers of the Pacific Gas & Electric Co. take a more optimistic view of concrete-faced dams. In the first place, on their system, reservoirs are empty during winter months as a matter of operating routine. Hence inspection and maintenance of the concrete faces involves no loss of power.

And they do not worry about having to replace the facing in 100 years or so. They do not think that replacement will be necessary in that length of time, but if it is, each project will have been amortized by that time and a new face can be built with little trouble. As a matter of fact, PG&E engineers say they feel safer about their structures because they can inspect the impervious membrane regularly. It is not hidden from them for eternity.

As for maintenance of PG&E dams, it involves sealing cracks caused by settlement and replacing more seriously damaged portions. It may have to be undertaken annually at first on new dams, but after early settlement has taken place, the interval between maintenance work may be extended to 10 years or more during the economic life of the dam. Salt Springs Dam, the largest concrete-faced rockfill, has not had any work done on the facing for seven years.

• **Kenney Dam** — Most spectacular structure of the sloping-core type of rockfill is Kenney Dam, one of the principal structures of Alcan's British Columbia project (ENR Nov. 29, 1951, p 40, and Sept. 25, 1952, p. 32.) One reason for the use of an impervious core for that dam rather than a concrete face is that drawdown will be limited to 44 ft. Thus there would be no opportunity for inspection and maintenance of a concrete face below that level.

This 317-ft high structure will have close to 4,000,000 cu yd of material in it. It was designed by the British Columbia International Engineering Co., Ltd., for the Aluminum Company of Canada. Consultants on the design on Kenney Dam included Growdon, Steele and Karl Terzaghi.

Design innovations include a concrete pad under the impervious rolled fill and gunited foundation slopes. The foundation area at Kenney Dam, although of solid rock, was located in an old riverbed channel. Numerous potholes and irregularities indicated

that compaction of the rolled fill might be difficult. For that reason, a concrete pad was placed on the irregular foundation so that filling operations could be started on a level platform.

A gunite layer from one to two inches thick was shot against the side slopes of the foundation where the rolled earthfill would come in contact with it. Then the whole abutment contact area was grouted through diamond drill holes. Gunite was applied in advance of the grouting for the following reasons: (a) to form a coating tending to force the grout down; (b) to force wider spread of low-pressure grout near the surface; (c) to permit more accurate determination of grout spread through weep holes in the gunite; and (d) for more effective compaction of the clay core by providing a smooth contact between the clay and rock.

• **Core thickness**—A comparison of the important filter and impervious core dimensions for the 230-ft high Nantahala Dam and the 317-ft high Kenney Dam follows:

	Zone thickness (feet)	
	Nantahala	Kenney
Downstream filter		
10 in. to 3 in.	14.75	20.4
3 in. to ¾ in.		22
3 in. to ½ in.	6.5	
less than ¾ in.		27.2
less than ½ in.	6.5	
Impervious core		
Top of core	13	51.4
Bottom of core	29	92
Upstream filter		
Sand		8.5
Less than ¼ in.	5	
Pit run gravel		10 to 250
3 in. to ¼ in.	5	

According to Growdon, theoretically, only very thin filter layers are required. That would account for the nominal thickness of the Nantahala zones. But, practically, each filter should be thick enough to be placed without difficulty and to adjust to settlement of the rockfill without danger of rupture.

The sizes selected for filter material in both dams fulfill the requirement that voids between the larger particles are filled by progressively smaller particles so as to prevent migration of the finer material.

The greater thickness of the filter zones and the upstream blanket of pit-run rock of Kenney Dam is due to the ample supply of sand and gravel that was available.

At Nantahala only a small amount of impervious fill material was available near the site. This limited rolled fill to a thickness that would prevent excessive seepage. Laboratory tests showed the thickness used would give a seepage rate of not more than 2.75 cfm.

At Kenney Dam, on the other hand, a considerable volume of suitable core material was available. Percolation rate was estimated at 2.5×10^4 cm per sec. The extra thickness at Kenney is intended to reduce seepage to a minimum.

• **Rubble masonry zone**—Bear River Dam in California, being the most recent concrete-faced rockfill dam, demonstrates to good advantage the techniques developed for building that type. Large rock pieces are carefully crane-placed in a layer along the upstream face to form a relatively solid, mortarless masonry.

At Bear River this layer varies in thickness from 10 ft at the top to 22 ft at the bottom, which is in contrast to a uniform thickness of 15 ft for the placed-rock zone for Salt Springs Dam. This was done because PG&E engineers believed that thickness should be a function of water pressure. The 10-ft minimum thickness was arbitrarily selected.

Purpose of the placed rock is to transmit water loads from the thin surface membrane into the dumped rock. It also equalizes spot settlements by distributing the effect over a greater area.

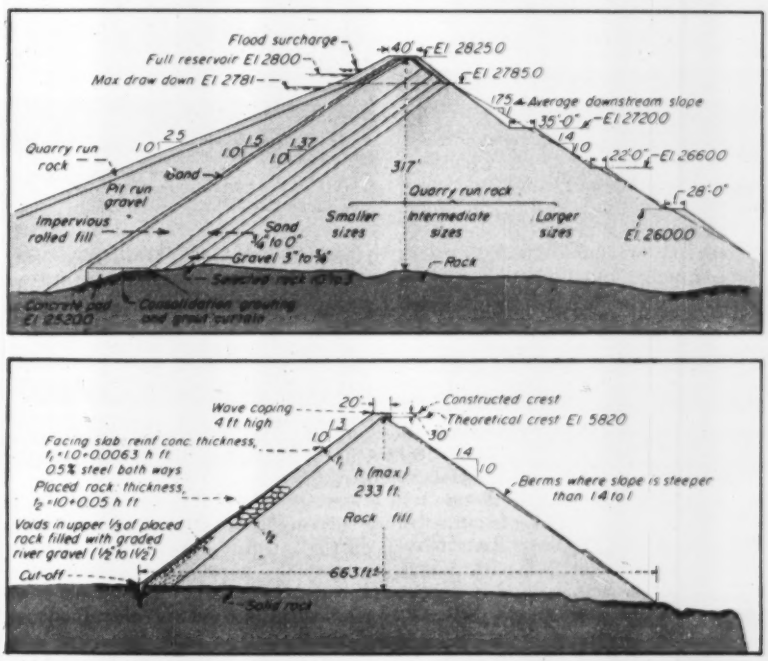
In early rockfill dams, dry-laid rubble masonry facings—sometimes on both upstream and downstream surfaces—were much more extensively used. They were made thick enough to permit the use of relatively steep slopes. At Bear River, however, the placed rubble masonry on the upstream slope is just thick enough to provide a base for the face slope and its slope is close to the natural angle of repose of the dumped rock.

The placed rock, though of such large size that much of it must be moved by crane, requires manpower to handle cable slings and to chink the larger rock. Increased labor costs lead to minimizing the volume of placed rock at the expense of a larger volume of dumped rock in a flatter upstream slope.

• **Concrete slab** — The slab of Bear River Dam is placed in sections that are generally 60 ft square. The sections are separated by expansion joints consisting of folded copper strips and mastic. This technique permits a certain amount of flexibility in the dam surface to accommodate settlement.

The expansion joints are backed up by unreinforced concrete beams 4 ft wide by about 2 ft deep, poured in trenches in the dumped rock. Their functions are to facilitate joint construction, permit joint movement and prevent excessive leakage in case of partial joint failure.

The Bear River slab varies in thickness from 1 ft at the top to 2 ft 5 in.



Wave coping 4 ft high
20'
Constructed crest
Theoretical crest El 5820
30'
1.3
1.0
1.4
1.0
Facing slab reinf conc thickness, t1 = 1.0 + 0.0063 h ft 0.5% steel both ways
Placed rock thickness, t2 = 1.0 + 0.05 h ft
h (max) 233 ft
Berms where slope is steeper than 1.4 to 1
Voids in upper 1/3 of placed rock filled with graded river gravel (1½" to ½")
Rock fill
Cut-off
663 ft²
Solid rock

CROSS SECTIONS of the two newest rockfill dams show differences between concrete-faced and impervious sloping core types. Kenney Dam (top) is 317 ft high and includes 3,700,000 cu yd of material. Bear River Dam is 230 ft high and has 1,400,000 cu yd of fill including a similar but smaller dam that plugs an adjacent canyon.

at the bottom. Most of the sections are reinforced with a single layer of 1-in. square bars at the center of the slab. Spacing varies from 1 ft 1 in. at the top of the dam to 7½ in. toward the bottom. The thicker slabs have two layers of similar reinforcing 12 in. apart. This follows exactly the plan for Salt Springs Dam.

The face of the slab is curved slightly upstream. This is so that when the dam settles the joints tend to close rather than open. In fact, slab movement of as much as 2 ft in mid-slab is expected when water load is placed on the structure.

• **Making the fill**—In general, the bulk of the rock on both types of dam is placed by random dumping. PG&E attempts to get the larger, cleaner loads dumped near the upstream face so that the clean stone can be used for the rubble masonry work. On the impervious-core rockfill dams, an attempt is made to dump the larger rock near the downstream toe so there is some sort of gradation toward the filter layers.

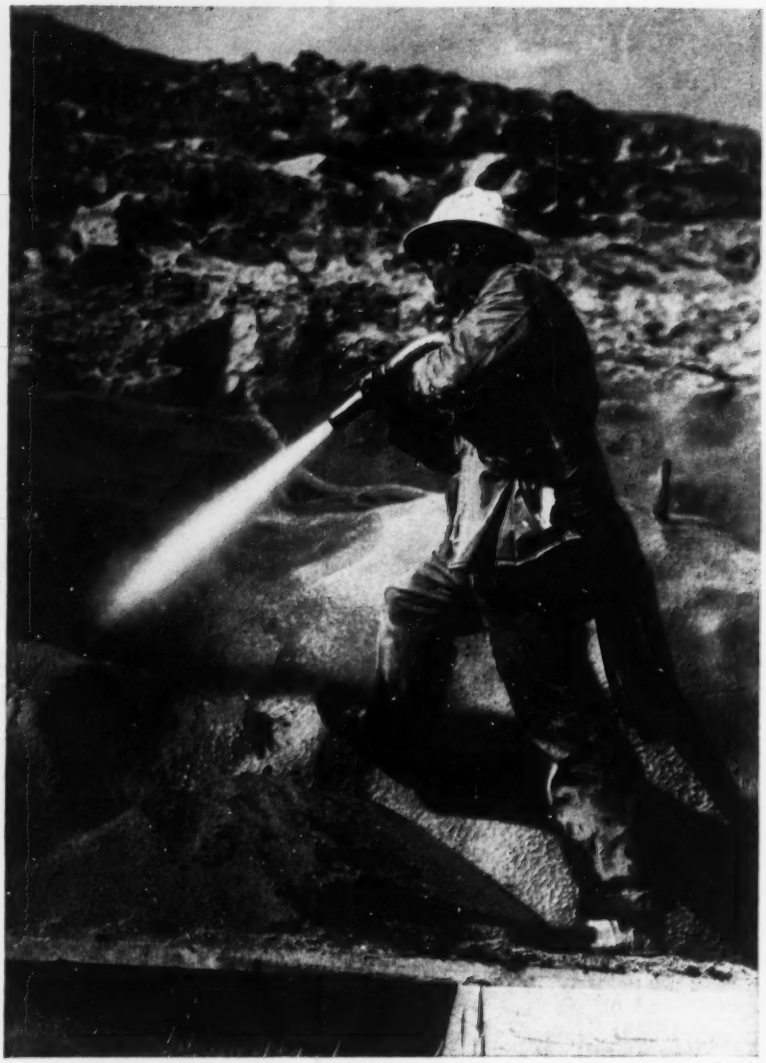
Rock is dumped in high lifts, allowing the big stone to topple and slide down the slope. Such rolling action breaks off the sharp points and this leads to greater stability. Besides that, the impact of the falling rock compacts previously dumped underlying rock.

Even as late as the construction of Salt Springs Dam, rockfills were generally placed with little sluicing. However, all recent practice calls for sluicing of the loose fine material with heavy streams of water from large monitors. The purpose is to bring the rock into point to point contact thus making a more stable structure. Besides washing out dirt and fines, the sluicing washes smaller rock into voids between the larger pieces. This reduces the amount of settlement in the completed structure.

The amount of water specified on recent jobs has varied from twice to four times the volume of rock. Sluicing is done as the rock is dumped.

• **Rock slope**—Slopes of the rockfill structures vary widely. According to extensive investigations made by PG&E, rockfills take a natural slope of very close to 1 vertical on 1.3 horizontal. As a safety factor, the downstream slope of Bear River is required to be 1 on 1.4 with berms provided if the actual slope is steeper than that. In contrast to this the downstream slope of Kenney Dam averages 1 on 1.75.

Upstream slopes are a different matter. Because of the placed rock and concrete paving, the upstream slope of Bear River is 1 on 1.3. Both Nantahala and Kenney Dams have upstream slopes of 1 on 2.5. This flatter slope is due to the additional thickness at the bottom of the impervious core and filter layers—actual upstream slope of the dumped rock at Kenney Dam is 1 on 1.37. The flatter upstream slope of the impervious core and filter type of dam is used to provide greater stability under sudden drawdown.



GUNITING foundation side slopes of impervious fill contact area is a unique feature of Kenney Dam work.

• **Shaking-table tests**—As a final check on the integrity of rockfill dams with a sloping impervious section, the British Columbia International Engineering had laboratory tests made on the resistance of such dams to earthquake. These tests were made under the direction of R. E. Davis, director of the Engineering Materials Laboratory at the University of California. Models 1/150 the size of the prototype were placed on a shaking table. The laws of similitude were very carefully observed.

According to the researchers, the tests demonstrated the inherent resistance of rockfill dams to earthquake motions. This confirms the opinion generally held by authoritative engineers in this field that rockfill dams are the safest type structure insofar as earthquake resistance is concerned.

In the tests no real failures occurred even though the models were subjected to quakes having accelerations two or three times as great as have ever been recorded in actual temblors. Such resistance is attributed to the flexible nature of the structure rockfills rather than to their strength. Chief effect of earthquake distortions was to produce settlements that, it was concluded, are not likely to be excessive.

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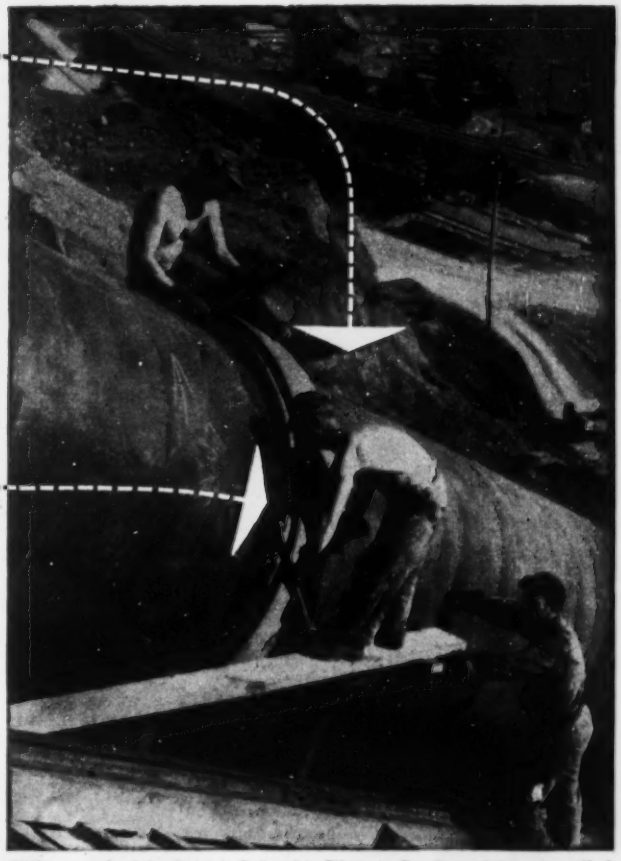
Dresser Couplings absorb pipe movement, prevent built-up stresses, speed construction

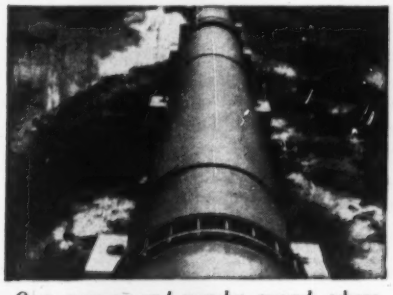


75" penstock of the British Columbia Electric Co. One of three installed at Bridge River, using Dresser Couplings specially designed for the job. With Dressers, construction time was cut from months to weeks, due to simplicity of installation. And penstocks have remained bottle-tight under very high pressures, despite severe weather conditions.

On either exposed or buried lines, from 3/8" to 72" diameter or larger, your best protection against vibration or movement stresses is a Dresser Coupling. Each of these "flexible-tight" joints takes up to 3/8" expansion-contraction movement . . . up to 4° deflection . . . cushions your line at every joint. Specially compounded rubber gaskets soak up vibration like a sponge.

Installation of Dresser Couplings is simplicity itself. Any workman can install them; the only tool needed is a wrench. And fast? On a typical 48" water line, 40 lengths of pipe were laid in one 8-hour day using a two-man joining crew.

Performance on half a million miles of pipe proves Dresser dependability.



Over swamps and marshy ground, where earth movement must be considered, Dresser Couplings keep Savannah's, new 14-mile, 42" water supply artery completely tight.

In busy streets of Stoneham, Mass., simplicity and ease of installing Dresser Couplings gets the job finished sooner. Dressers absorb traffic vibrations.

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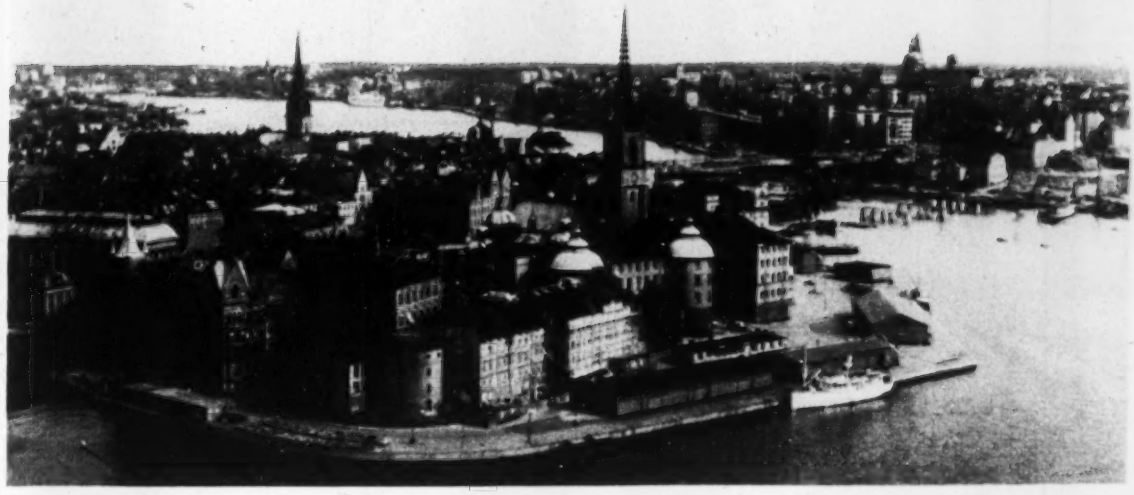


STOCKHOLM is divided into two sections by Lake Maelar, which is now being spanned by a new bridge (right center). Settlement of the far bank during construction of the piers resulted in a change in the design of one pier.

Deep caissons stabilize weak bank

CONCRETE-FILLED CAISSONS, carried to glacial gravel, are being used to prevent movement of the bank at the southern end of a new bridge across Lake Maelar in Stockholm, Sweden, which is being built by the Stockholm Harbor Board.

The bridge is to form a new link between the northern and southern sections into which the lake divides the city. It will consist of two parallel structures, one for rail traffic and one for highway purposes. The superstructures are to be conventional types, and the substructures, as designed originally, were to have been made up of shallow concrete pedestals supported on steel pipe piles, 19 to 30 in. in diameter, driven to rock at depths as great as 150 ft below lake level, as shown in the drawing at the right.

The lake bottom consists of mud, alluvium and clay overlying glacial gravel and rock. Where the bridge enters the southern part of the city the bank consists of a bed of alluvium, about 70 ft deep. It was here that trouble developed when driving of piles for the piers near the south bank began. While piles for Pier 8 were being driven, settlements were noticed along the bank back of the bulkhead. They increased materially when driving of the piles for Pier 10 started. Both horizontal and vertical displacements were occurring at a rate up to 2 in. and 4 in. per month, respectively.

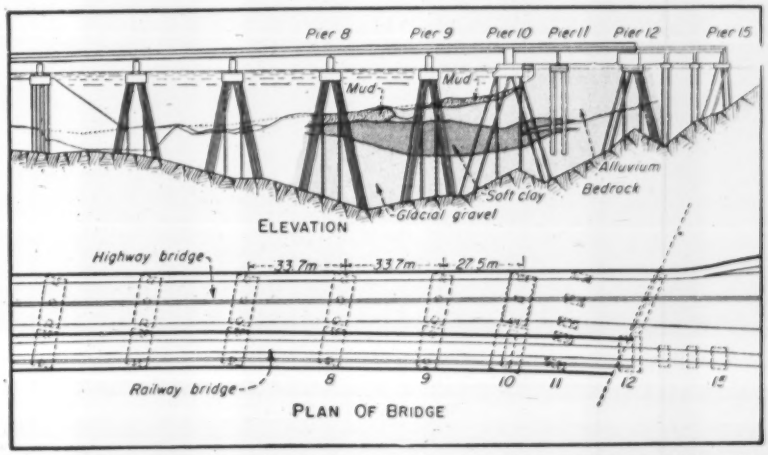
Pile driving was stopped and additional subsoil studies were made. These revealed a layer of soft clay located beneath the alluvium, as shown in the drawing. It had an unconfined compressive strength of less than 0.4 tons per sq ft and its position indicated that the pile driving had caused sliding of the overlying strata in fair accord with the Swedish slip-circle theory.

The shore area had poor stability, its factor of safety being estimated at about 1.0. As a consequence of the dynamic action of the pile driving —up to 15,000 blows per pile—the shearing strength of the stratum had decreased and failure threatened if the driving continued.

Since the dynamic effect of the prospective railroad traffic on one part of the bridge was deemed to act more or less like the pile driving, it was considered necessary to increase the factor of safety materially.

At that time, Paul Leimdorfer, head of the Department of Quays and Docks of the Harbor Board of Stockholm, was called in to recommend a stabilization method that would not endanger the piers already in place.

He recommended that all pile work on Piers 9, 10 and 12 be stopped until the load that started the sliding could be reduced. To reduce the load he proposed that Pier 11 be built as four large open caissons of reinforced concrete, 20 ft and 30 ft in diameter, or alternatively, that several 60-in. steel pipe caissons be sunk by open dredging and filled with concrete. He com-



SOUTH END OF THE BRIDGE where settlements of the bank began during the driving of pipe piles for Pier 8. Those movements grew larger when vertical piles for Pier 10 were driven. Driving was discontinued on that pier temporarily, and caissons were substituted for piles to support Pier 11.

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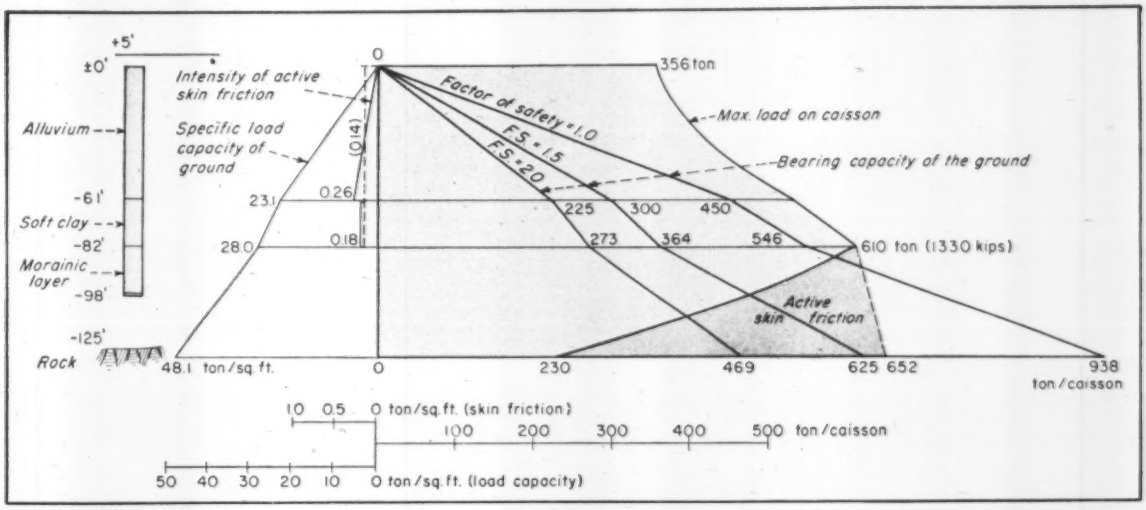


DIAGRAMMATIC PRESENTATION of the loads on a typical caisson for Pier 11 and of the amount of skin friction that would be effective in carrying part of the weight of the fill.

puted that the alluvial material excavated from the caissons would contribute about 20% of the needed relief and that skin friction on the sides of the caissons would contribute the remainder by transferring part of the load to the caissons and thus to the stratum in which they would be founded.

Final decision was to use 60-in. caissons, primarily because the possibility that the larger units, which would have to be sunk over 100 ft, might tilt during sinking and so get badly out of line. A. Wickert, chief engineer of the Harbor Board, made a further recommendation that additional relief be provided by dredging the alluvial soil from the affected area to a depth of about 12 ft below lake level, refilling the area with lightweight ashes. Because of the reduction in load that this plan would provide, it was estimated that only five pairs of 60-in. caissons would be needed.

The drawing above shows the bearing capacity of the ground and the estimated intensity of skin friction on one of these caissons. It also illustrates how the designers computed that the maximum load on a caisson decreased within the morainic layer and the necessary depth to which the caisson was to be lowered as a function of the factor of safety, which was chosen to be 1.5. This depth was computed to be about 98 ft below lake level.

Ground capacity below the clay level, at −82 ft, was computed at 63 kips per sq ft. Above that level passive skin friction is expected to increase the load on the caissons to 1,330 kips, but beneath that level it was assumed that skin friction will take part of the load.

Mr. Leimdorfer recognizes that it will be some time before the skin friction becomes effective in transferring part of the weight of the alluvial material to the caissons, but concludes that it will be effective by the time the bridge goes into service, as Pier 10 must be completed subsequent to construction of Pier 11, and Piers 9, 12, 13, 14 and 15 must be built.

Mr. Leimdorfer estimates that some three or four months after the caissons have been completed nearly two-thirds of the estimated skin friction will have developed. Also there will have been additional compaction of the surface, which in turn will increase the consolidation of the material surrounding the caissons.

DREDGING inside the 60-in. caissons was done with a special "hammer-grab" designed to work in restricted places.

Added stability also is to be obtained by dumping broken stone into the lake on the east and west sides of the bridges opposite Piers 8 and 9 until the level of the banks of stone is up to 33 ft below water level. About 250,000 cu yd will be dumped on each side of the structure. The weight of this mass of crushed stone is expected to counter-balance the possible sliding tendency of the neighboring areas.

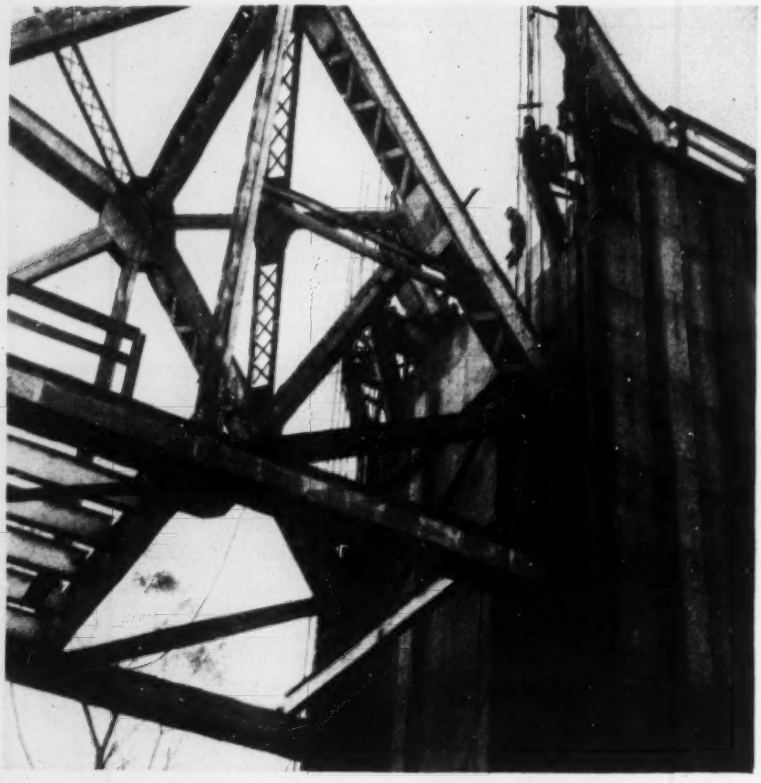
Also contributing to the stability of the bank is the shearing resistance of the ten concrete caissons that are being sunk to support Pier 11 as they pass through both the alluvium and the soft clay and extend well down into the underlying glacial gravel. Calculations indicate that the shearing resistance will increase the factor of safety by 5 or 8%.

The 60-in. pipe caissons for Pier 11 have steel walls 0.4 in. thick. To avoid any shaking effect, they were sunk by rotating them while dredging inside, using special drilling equipment developed in France. Each caisson was filled with reinforced concrete after being sunk to the specified depth.

Because of the corrosive character of the alluvial stratum, the steel shells of the caissons are not considered as permanent structural elements.

Eight of the caissons are sunk and sinking of the two last units is proceeding. While construction of the remaining piers is in progress, extensive testing of the actual value of skin friction is going on in order to ascertain the adequateness of the computed number of caissons for Pier 11. Concreting will be carried out after the testing has been completed.

The structures were designed and are being constructed by the Building Department of the Harbor Board.



SHORTENED TRUSS descends face of bridge pier, suspended on rods from jacks resting on special brackets. Note cut-off portion of truss atop pier.

Jacks lower highway bridge 80 ft for dismantling on bank of river

JACKS SIMILAR TO THOSE used in the now-familiar lift-slab technique for building construction are assisting in the dismantling of a two-span truss bridge in Mississippi.

Resting on high piers, the trusses are shortened, to clear the piers, and suspended from new brackets on the piers. Jacks are in the linkage between brackets and trusses.

Crossing the Yazoo River on U. S. Route 61, the bridge has been replaced by a new one recently built downstream.

Early in 1952 the bridge was offered for sale by the State of Mississippi with the stipulation that the purchaser dismantle the bridge and remove it from the site.

Hyde Construction Co., of Jackson, Miss., was the successful bidder. Texas Construction Co., of Dallas, contracted to perform and supervise removal.

• **High bridge**—The 26-year-old bridge consists of two 350-ft through trusses, weighing 340 tons each (structural steel only).

The lower chord of the bridge is 120 ft above the river bed; it is 80 ft above high ground at the north pier (this is the distance of lowering).

By the use of the hydraulic jacks now used in the Youtz-Slick lift-slab work (ENR Nov. 20, 1952, p. 44) the bridge is being lowered between the piers to the ground where it is to be dismantled and re-erected at a new site on a highway crossing in Adams County, Miss.

The original plan was to lower the bridge onto barges and float it downstream to the new location, where it would be raised on new piers, but the Yazoo River has receded during a long drought to a point where barges cannot navigate to the site. Therefore, the bridge's first span was landed on the dry bank, the plan being to cantilever it over the water to be dismantled.

• **Accident**—The first span was lowered to within about six feet of the ground when, through human error, the structure crashed the remaining distance to the ground. Contractors are confident that their engineering principles on the project are correct and are proceeding according to the original scheme with the other through truss.

First step in dismantling was concrete-deck removal, to reduce bridge weight.

• **Truss alterations**—Channels were welded vertically between end posts and lower chords so that when the ends of those members were cut away, a new, shorter framing would be created. This new framing was in such a position that when the ends of the bridge were removed, the bridge was shorter than the distance between the vertical-faced piers by 2 in. on each end.

The piers are of such shape that they readily facilitate placing "I-beam saddles," or brackets, to hold the jacks. There is a 2-ft offset in the pier 5 ft below the top. Upon this step, wide-flange struts were set in a sloping position, being tied back at their tops to complete the brackets. There are two brackets at each bearing plate, each bracket supporting a jack.

• **Jack setup**—The jacks are hydraulic, with a 64-sq in. piston, and are operated at 2,000 psi. The bridge is carried by 2 threaded rods 2 in. dia at each jack. This makes a total of 8 jacks and 16 rods. Rods are high-tension 150,000 psi steel.

• **How bridge is lowered**—The lowering operation is conducted by raising the bridge ¼ in., with the last ¼ in. of lift in the 3-inch total lift of the jack; with the extended jacks holding the bridge, nuts are located on the rods 2¾ inches above the jack base plate, and upon lowering the jack piston the bridge load is transferred to these nuts after a descent of 2¾ in. Thus, in each complete cycle the bridge is raised ¼ in. and lowered 2¾ inches, for a net lowering of 2½ in.

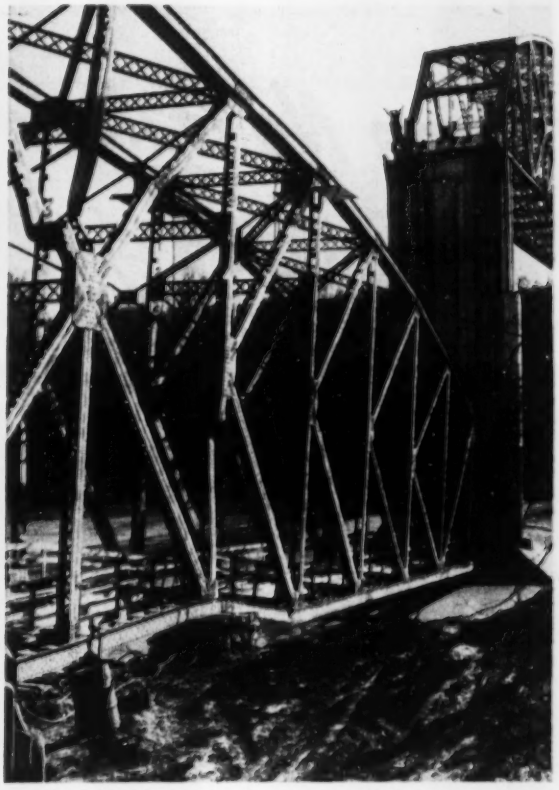
A man stationed at each jack performs the setting of the nuts and maintains the level of the nut on two additional (safety) rods on each jack in such a manner that a hydraulic failure would cause a drop of only a fraction of an inch.

The rods are provided in staggered lengths so that the load can be transferred to the safety rods and additional lengths attached to the lowering rods as they are needed.

The jacks at either end of the bridge are controlled through one hydraulic panel, but there is no mechanical connection between the operations at either end.

At first the lowering operation was performed simultaneously at both ends of the bridge. This lack of positive coordination between the ends caused some horizontal movement in the structure and resulted in a change in procedure whereby ends now are lowered alternately, one cycle of the jack at a time. In this manner the

JACK OPERATION—One workman at each jack runs nuts on the threaded rods (center) in sequence detailed below. Outer rods are safety rods. Eight hydraulic jacks are controlled from a single panel.



ACCIDENT—When first truss was six feet above its final position it slipped, causing this failure over support prepared for cantilever dismantling. Investigation exonerated the lowering method, blaming human error.

bridge is lowered the 80 ft to the ground at a rate of about one foot of descent an hour.

As a protection against excessive horizontal movement, guides are welded to the sides of the trusses, to slide along the edges of the piers.

• **How the accident happened**—When the first span was about six feet off the ground, a nut on one of the safety rods was allowed to come in contact with the base of the jack. The entire load of that jack thus was transferred to this one rod before the mistake was discovered. This jack became tilted and slid from its base. Resulting torsion on the span caused all jacks to become disengaged from their bases, and the structure fell (see photo). According to Jack Ward, of Texas Const. Co., damage seems to have occurred to about a fourth of the span's members.

The second span is being lowered with the jacks and rods with full approval of the participating contractors, the insurance carriers and the sureties, according to Ward.

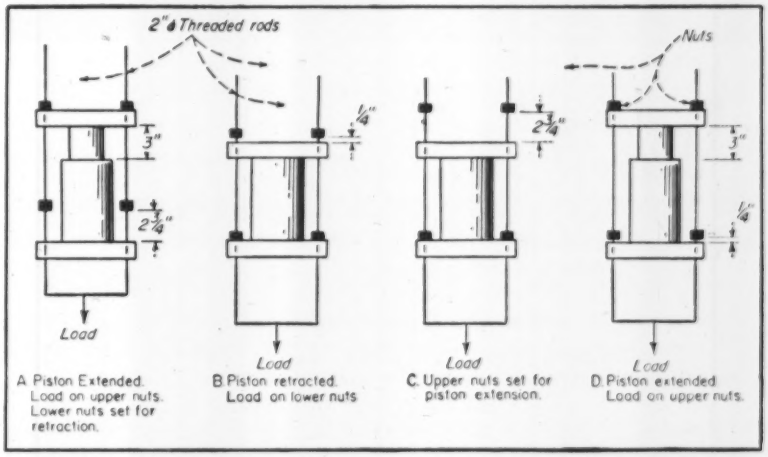
The bridge-lowering contractor says this method of lowering the span has proved much more economical than the conventional method of extensive falsework.

Peeler & Kinkle, of Dallas, Tex., are the consulting structural engineers for the contractor.

Subcontractors called upon by Texas Const. Co. were Liberty Iron & Metal Co. and S & L Const. Co., both of Dallas.

S & L Const. Co. envisioned the application of Youtz-Slick lift-slab jacks and in turn employed the Lift Slab Co. of San Antonio, which supplied the hydraulic jacks, lifting rods and panel, and operated the equipment.

Supervising operations for the Texas Construction Co. are Bill J. Shelton, J. A. Stavast and E. A. Thornton. M. D. Wilson is superintendent for the S & L Construction Co., with A. L. Leal and Tom Rawlings assisting. Kenneth Hewitt is superintendent for the Lift Slab Co.


2" ø Threaded rods
Nuts
3"
2¼"
¼"
Load
A. Piston Extended. Load on upper nuts. Lower nuts set for retraction.
B. Piston retracted. Load on lower nuts
C. Upper nuts set for piston extension.
D. Piston extended. Load on upper nuts.

LOWERING CYCLE—Three-inch piston stroke gives net movement of 2¼ in. One-fourth inch space shown at B and D allows freedom for starting nuts upward. Jack base remains stationary on pier bracket.

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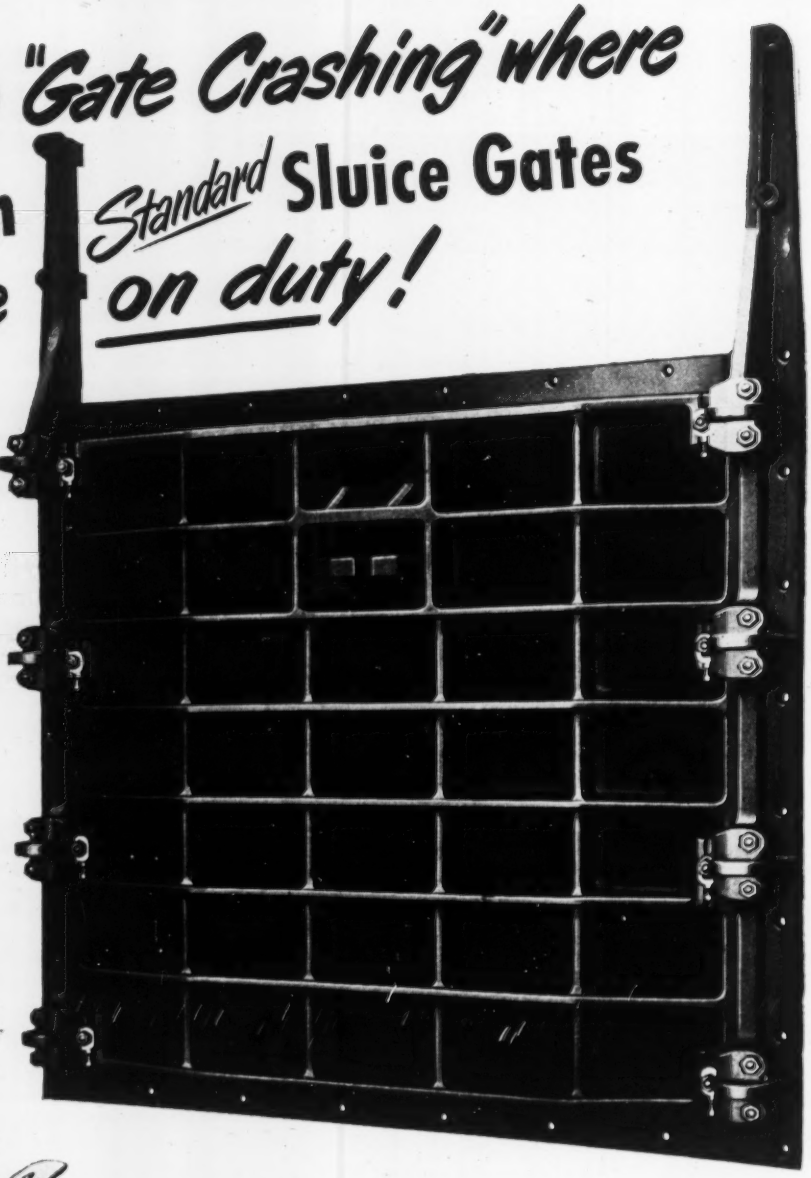

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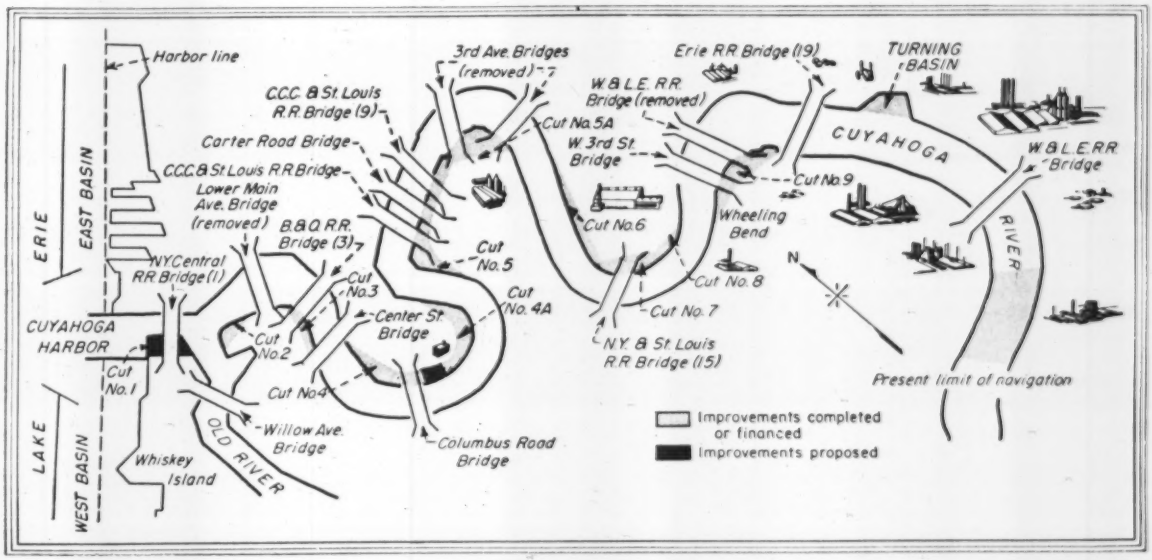


Cuyahoga projects pass halfway point with completion set for '57

Cleveland's $50-million improvements program keeps pace with industrial expansion along stream

Cleveland's 50-million Cuyahoga River project, one of the few programs of its type to enjoy sustained progress throughout the years, has passed the halfway point and its backers hope to see it completed by 1957.

A joint enterprise financed by the federal and city governments and private capital, the project is being pushed to keep pace with the $150-million steel-production expansion that has taken place along the Cuyahoga since the end of World War II.

In 1953, as in years past, a delegation from Cleveland will appear before the Senate and House Appropriations committees. They will ask for $9.4 million to make improvements on the channel and finish part of Bridge No. 1, and all of Bridges No. 3 and 15 (see sketch).

Last month a train crossed over Bridge No. 29, one of the first railroad bridges to be completed under the Truman-Hobbs Act. When, in 1936, money was appropriated for Cuyahoga River improvements, Cleveland's city government and private capital in the Ohio metropolis were quick to act. In the ensuing years, increasing help also has come from industries along the river and from railroads.

Total needed from the federal government to finish the project is $13.8 million. Local government and private interests are expected to put up the difference, making the remaining total to be spent more than $25 million.

• **Recent developments**—In addition to the recent opening of Bridge No. 29, costing about $2 million, these recent developments took place:

• There is now $5 million available to start construction of Bridges Nos. 1 and 9. First contract for No. 1 will be let in the spring. Contracts have been let for Bridge No. 9.

• The district engineer at present is considering plans for Bridge No. 19 to cost $4.7 million.

• Bridge No. 8 is scheduled to open in the spring.

The Cuyahoga River has seen tremendous industrial expansion in recent years and is regarded as one of the busiest inland ports in the United States. Steel capacity has risen from 1,700,000 tons in 1938 to an estimated 1953 production of 3,900,000 tons.

In 1950 iron ore and limestone tonnage along its 5.8 navigable mi. came to 7,600,000 tons. Next year tonnage will reach about 12,000,000 net tons. An additional 17 mg of petroleum products, and more than 300 other cargoes of raw materials are expected to move upstream to steel mills and other industries which are increasing in number in that area.

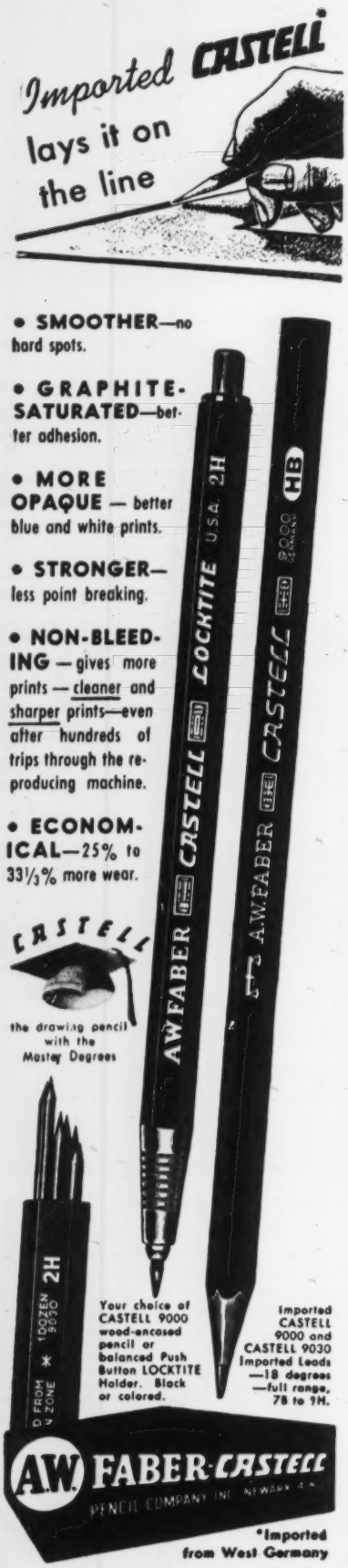
• **Program**—The curving river has given long ships trouble in making the bends and turns. Rather than to attempt to straighten the stream it was decided to ease the bends so that they will accommodate lake ships of the new 650-ft class.

Traffic along the river necessitated rebuilding several railroad bridges. Also included in the program is the construction of steel and wood bulkheading; extension of the river channel; dredging; and changes in structure locations and a number of submarine crossings.

The sponsor of the program is the Cleveland Chamber of Commerce. Realizing that the winding Cuyahoga had to be altered to accommodate expansion in the flats bordering the river, the chamber took the project under its wing in 1937 and has been working on it ever since. Results are now beginning to show.

In 1952 the Cleveland project and one at Buffalo were the only two approved by Congress for the Great Lakes Division.

Traveling time for ships up the 5.8 mi has been cut from 12 to five hours and is expected to be reduced three hours by 1957.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Delaware mayors study sewage disposal

Kent, Wash., is ordered to build disposal plant—Penn Township, Pa., told plant is not a nuisance

In three separate sections of the country, sewage disposal made news. In Penn Township, Pa., residents were told that a sewage disposal plant is not a nuisance. In the state of Washington a city was told to build a sewage disposal plant because fish are dying in a nearby river. And Delaware mayors were studying a program that might lead to rebuilding at least three-quarters of the sanitation systems in the state.

• **Delaware study**—Herbert D. Cluley, Jr., mayor of Camden, Del., chairman of a five-man committee set up at a recent meeting of the state's Mayor's Association to study the sewage disposal and sanitation systems, said:

"It is safe to say that three-quarters of the towns and cities of Delaware have obsolete or outmoded sanitation and sewage disposal systems. The situation offers a grave threat to the health of these communities and should be corrected."

When the study by the committee of the association is completed Cluley said a program would be drawn up and presented to the legislature which convenes next month.

Cluley added that he did not expect to have any trouble convincing the legislature of the grave need for sanitation improvements throughout the state. He said that the lawmakers probably would approve of a plan to set up sanitary districts in various parts of the state, in order to accelerate the program.

Besides menacing the health of many communities, improper sanitation and sewage disposal systems hinder the normal expansion of communities where new industry has brought in new residents, he declared. The southern section of the state has a greater need for modern sanitation than other parts of Delaware, since it is there that the greatest population growth has taken place, Cluley declared.

• **Disposal plant order**—As the result of river pollution which killed an estimated 10,000 silver salmon and other fish, the Washington State Pollution Control Commission has directed the city of Kent to build a sewage disposal plant (ENR Dec. 18, 1952, p. 62).

State officials believe the fish were poisoned by a substance discharged by a Kent manufacturing plant into the city's sewer system.

E. F. Eldridge, director and chief engineer for the commission, has suggested that Kent city officials ask for a hearing before the commission, at which time they could appeal the order. After the order becomes final, the city has up to 15 days to file a court action contesting it, under the state's pollution control act. The order calls for "substantial completion" of the plant by Jan. 1, 1954.

The commission informed Kent on Nov. 19 that it is in violation of pollution control laws and instructed the city to file a report on corrective steps. Such a report has been filed, but the corrective steps cited by the city are insufficient, Eldridge said.

The State Department of Fisheries has filed a claim of $81,500 on the Kent City Council in connection with the fish destruction.

Mayor Dave Mooney, of Kent, said the city has been trying to build a sewage disposal plant since 1947 but has been unable to arrange financing. New financing plans will be presented to the city council in the very near future.

• **Disposal plant a necessity**—While a sewage disposal plant can't be classed as "overly romantic," it has to be put up with on practical grounds.

That's what residents of nearby Penn Township were told by the Pennsylvania Supreme Court recently.

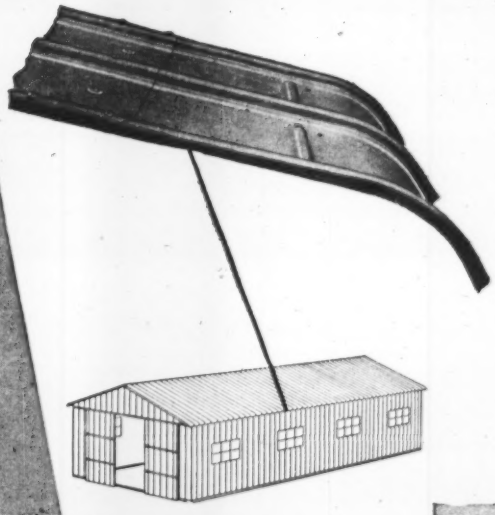
The residents were trying to block construction of a sewage disposal plant which the Sampson Land Co., and two affiliated firms, had offered to build and give the township free of cost.

The three firms were constructing 309 one-family homes on a 150-acre tract. Penn Township accepted the firm's gift and agreed to operate the plant.

But a group of taxpayers went to court, claiming the plant would be a nuisance and violate the community's zoning laws.

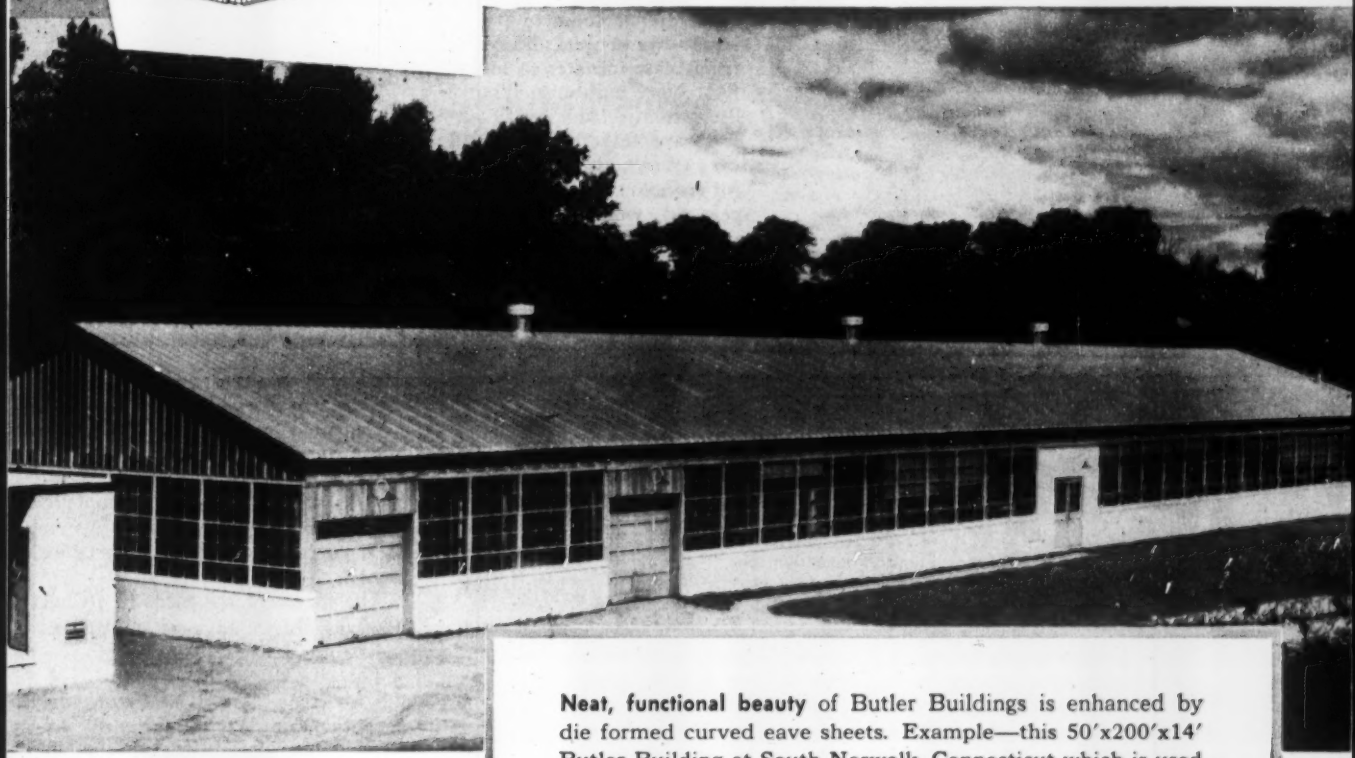
The Allegheny County court dismissed the suit. The state's highest court declared such a treatment and disposal plant is not odoriferous and is not a nuisance. The court held the transaction legal and that the community should be glad to get such a plant.

Curved Eave Sheets for Attractive Appearance



CURVED EAVE SHEETS are a feature that gives Butler Buildings (with galvanized or aluminum covering) a look of modern, functional grace. The curved eaves on Butler Buildings, die formed on *full length* roof sheets, are an integral part of the roof covering. With sidewall sheets, mitered at the top to nest into the roof sheet corrugations, a neat, weathertight eave is formed.

This and many other Butler features make Butler Buildings adaptable to nearly any kind of construction or expansion you may have in mind!



Neat, functional beauty of Butler Buildings is enhanced by die formed curved eave sheets. Example—this 50′x200′x14′ Butler Building at South Norwalk, Connecticut which is used as a research laboratory. Rows of windows mean a well-lighted interior.

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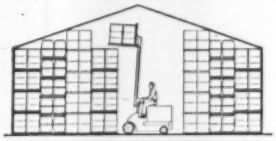

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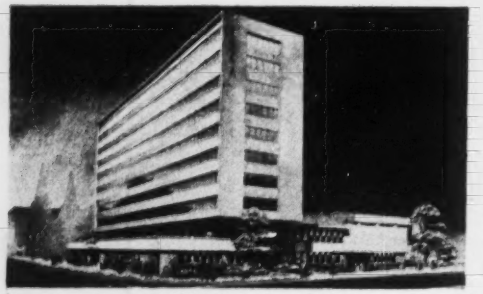

New Y. M. C. A. building, Newark, New Jersey. Three hundred and thirty-eight Franki Pressure Injected Spread Footings averaging 15 feet depth. Emil A. Schmidlin, Architect.

• When put to a special 240-ton test—twice the design loading of 120 tons—the Franki Pressure Injected Spread Footing settled only one-fifth of an inch at the site of the Newark, New Jersey Y. M. C. A. building.

Costs were cut substantially! And time and materials expense was sharply reduced.

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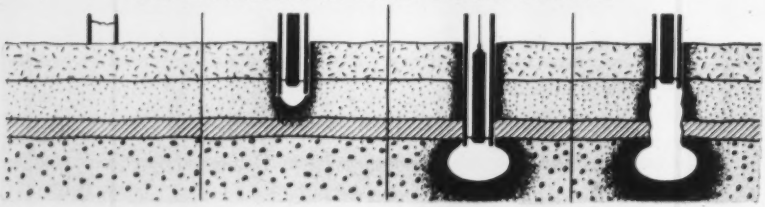

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John E. Mathews Bridge is completed

Jacksonville, Fla., city officials have been busy making plans to dedicate the $12.5-million John E. Mathews Bridge. The 7,375-ft-long bridge, key structure in the Jacksonville expressway system, will carry four lanes of traffic.

The east side approach to the main span is 3,447 ft long, including three truss spans totaling 986 ft. The west approach is 2,306 ft long. The main span over the terminal channel, consisting of two anchor spans each 406 ft long and a central span 810 ft long, measures 1,622 ft in over-all length. Crown of the roadway is 161 ft above St. John's River at mean sea level.

Steel erection by Bethlehem Steel Co. was completed late last month. Most of the substructure was constructed by Merritt-Chapman & Scott Corp.

But the dedication will have overtones of gloom. The State Road Commission has recently disclosed completion of the expressway will cost $27 million more than the $42 million originally estimated.

So far about $30 million has been spent on the program for another crossing of the St. John's River.

Eklutna power availability may change city's plans

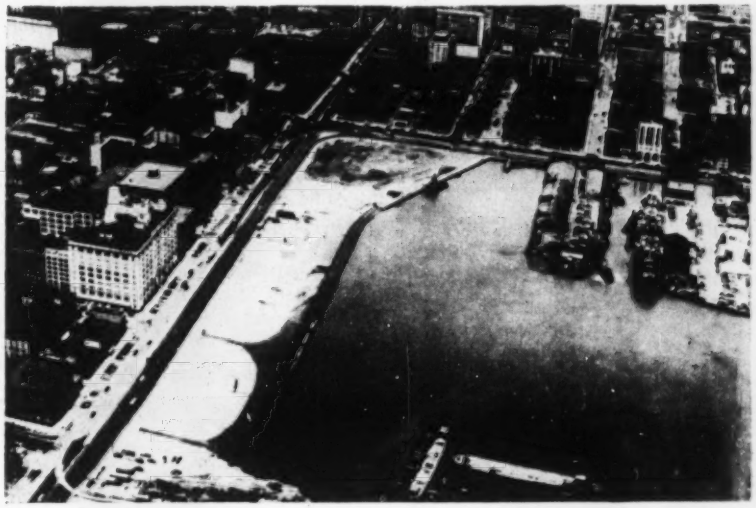
A statement that the Buerau of Reclamation would accept responsibility for power generation in the Anchorage, Alaska, area has led Anchorage city officials to re-appraise their plans for proposed construction of a $3.5-million steam generating plant.

The statement was made by Joseph Morgan, district engineer at Anchorage for the bureau.

The city already has committed itself for some $96,000 in engineering and other contracts for the plant, for which plans were being prepared by Burns & McDonnell Co. of Kansas City, Mo.

Morgan is reported to have told Anchorage officials that they can get power from the Eklutna hydroelectric project, now under construction, at a cost of some eight mills per kwh for firm power and six mills for interruptible power. Cost of power from the proposed steam plant is estimated at 2.5¢ per kwh. Alaska is badly in need of more power (ENR Dec. 11, 1952, p. 32).

Anchorage city officials are expected to make a decision this month on whether to proceed with the steam plant.



HELIPORT SITE is at the head of this area of fill going in east of Pratt Street.

Baltimore plans harbor-side heliport

Will bring passengers from city's airport to heart of the city in seven minutes flying time

Baltimore, Md., may soon have a harbor-side heliport in the heart of the city, only seven minutes flying time by helicopter to the city's Friendship International Airport.

The site under consideration is a fill area along busy Light Street where the shoreline is being extended several hundred feet out into the harbor. The city's Airport Board has recommended the waterfront site as ideal and also suggests heliports on a new garage to be built on the Civic Center and at three suburban locations.

• **Heliport**—On the new harbor fill the airport board wants an area 300 by 500 ft designated for use by the helicopters. The fill work has been held up because of steel shortages but will go forward again this year.

At the upper end of the fill and covering about one quarter of the fill area will be a park. It is from this location that helicopters have been making test flights. The remainder of the fill area originally was slated to become a parking area, and the airport board is asking that part of this space be reserved for the heliport.

The upper end of the fill is only about three blocks from busy retail areas. One big hotel is two blocks from the park at the north end of the fill, another is four blocks distant, and the largest hotel in the city is about six blocks away.

Friendship Airport is about a 12-mi drive from downtown Baltimore. Airport board officials are urging the waterfront heliport as a natural accessory to the two-year-old, $15-million international airport.

• **Testing**—In the test flights this month the noise factor counted for little as the roar of the helicopter blended with normal traffic noise of the area.

A 7-passenger helicopter was used in the tests, but it is expected that 10-passenger models will be available for use in 1953.

The Baltimore & Annapolis Railroad has applied to the Civil Aeronautics Board to provide helicopter service from Baltimore to the airport and to Annapolis, Fort Meade and Washington. In addition the railroad is seeking permission to set up a helicopter service between Washington and New York, serving Philadelphia and Baltimore.

Already the Pennsylvania Rail Road and the Baltimore & Ohio have petitioned to intervene in the case, declaring "no justification" can be shown for the Washington to New York service from the standpoint of public need. The *Baltimore Evening Sun* commented editorially that "when potential competitors begin to oppose a new invention, the invention is about to 'arrive'."

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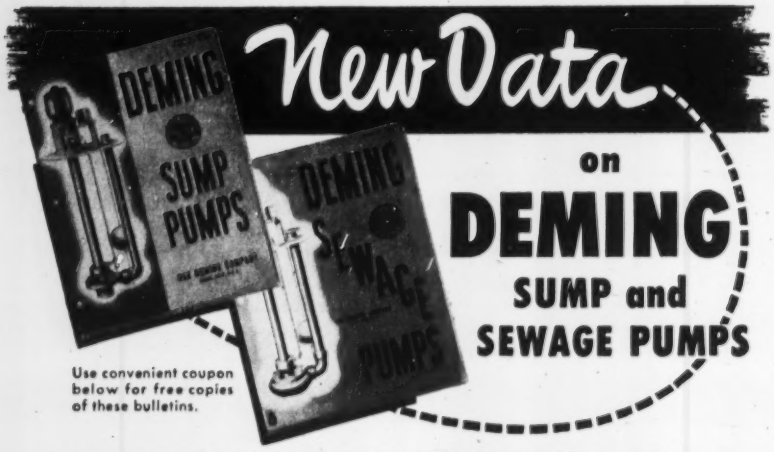

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Water company defends Perkiomen Dam site

The Philadelphia Suburban Water Co. considers its proposed Perkiomen Creek Dam at Green Lane, Pa., as the best "available within or without the company's charter area."

The $4.2-million project was thus described by W. James MacIntosh, company counsel, at the final session of a two-months hearing before the state Water and Power Resources Board. The board held the hearings to consider a protest by ten Perkiomen Valley communities against a 1951 ruling which allows the company to draw an estimated 16.5 mgd from the creek.

MacIntosh told the board that the reservoir will produce "water at less cost, and will adversely affect fewer people, fewer homes and dwellings, and less valuable property, than any other reservoir that might be built within or without the company's charter area."

• **Dam needed**—The utility at present serves 450,000 customers in the suburban Philadelphia area. It seeks the dam to assure a water supply for future population increases, which are coming fast.

Francis S. Friel, the utilities' consulting engineer, told the board that

Parking plan successful

Pasadena, Calif., after eight months of try-out, found a new method of parallel street parking satisfactory.

The method is used on one street which is narrow (48 ft), heavily traveled and with considerable truck traffic. Traffic was being held up continually by cars jockeying into parking position.

To relieve the situation, Pasadena redivided parking space, providing for 17-ft berths with 12 to 14 ft of space between each two berths. This gives a total of 29 to 31 ft at the curb for cars to manuever in, eliminating all necessity of backing in from a traffic-halting position.

Although some parking space has been lost, merchants on the 12-block stretch find this a small loss compared with the advantages of diminished street congestion and easier access to stores by delivery trucks, according to P. K. Rusk, Pasadena traffic engineer.

additional water in the creek resulting from the dam "cannot help but improve such recreational facilities as those for fishing, boating and swimming."

He estimated the average flow at the dam site at between 3.4 and 4 mgd. However, he said the dam would increase the minimum flow to at least 6.9 mgd.

MacIntosh said the company has spent $188,000 on the new project already and that in view of that large investment the original permit should not be revoked.

Seattle highway work awaits legislative acts

Highway construction in the Seattle metropolitan area will be vitally affected by the decisions of the Washington state legislature, which began its 1953 session last week.

First important decision will be on the request of the Washington Toll Bridge Authority for a $770,000 appropriation to finance preliminary engineering for the proposed $82-million bridging of Puget Sound west of Seattle.

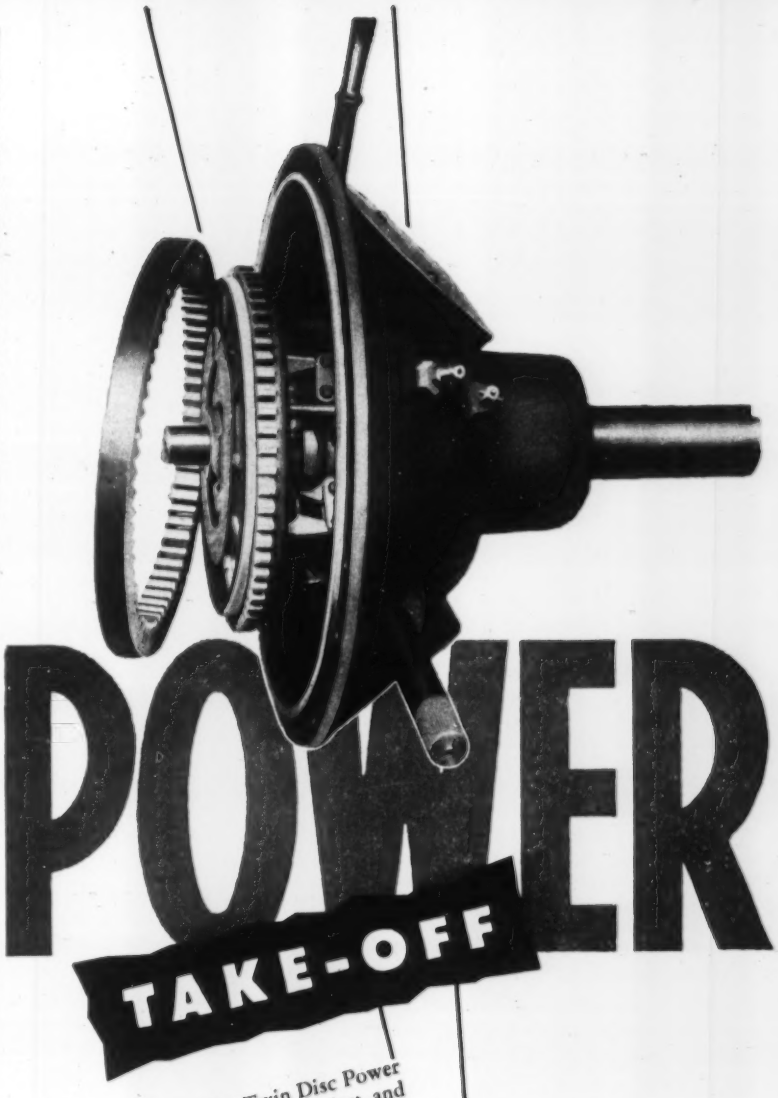
The proposed crossing via Vashon Island has become highly controversial.

Tacoma objects because it would drain trade away from its merchants, and residents of Bainbridge Island and the Olympic Peninsula favor a bridge at another site.

The Bainbridge islanders particularly object to the elimination of ferry service from Bainbridge to Seattle upon completion of the bridge, an objection which probably might be met by the substitution of passenger boat service.

• **Toll road**—Second important decision will be on the proposed creation of a toll road authority to study financial feasibility of a toll road expressway between Tacoma and Everett, through Seattle. The state would like to build such a 50-mi expressway but doesn't know how to finance it. Tolls have been suggested as the answer, but Seattle businessmen are not convinced of the wisdom of charging motorists for admission to trade in their city.

Other highway matters before the legislature include: Repayment to the motor vehicle fund of $10.5 million which was diverted to non-highway purposes between 1933-43; and proposed construction, with Oregon, of a new interstate toll bridge across the Columbia River between Vancouver, Wash., and Portland, Ore.



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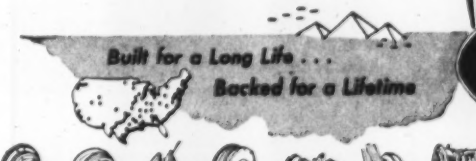
Twin Disc Power Take-Offs are available with clutches ranging from 6.5" to 24" single-plate, from 11.5" to 24" double-plate. Housing sizes No. 6 S.A.E. to No. 00 S.A.E. Capacities up to 650hp. Write for complete specifications, Bulletin No. 129-C.



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CONNECTING two important sections of Havana, Cuba's first traffic tunnel replaces old, narrow bridge.

Push work on first Cuban auto tunnel

Reinforced concrete tunnel built in difficult soil conditions —Replaces swing bridge

A new tunnel, Cuba's first, is nearing completion under the Rio Almendares, to link Havana's Velado section, on the east bank of the river, with the suburb of Maramar on the west.

Cubans are building the tunnel to relieve the ever-increasing traffic problem between Havana and the swelling suburban community. Previously all traffic had to squeeze over an old swing bridge to get from one community to the other.

• **On site of old bridge**—The tunnel will cross the river at the same place as the bridge once did. The bridge, meanwhile, has been moved upstream and re-erected.

The tunnel will have a total length of 530 meters, including approaches. The actual underground section, which is less than half of the total length (216 m.), looks like a concrete box. It is 22 m. wide, with a free height of about 4.5 m. All sides are constructed of reinforced concrete.

• **Buoyancy problem** – Construction conditions were unusual. For instance, the subsoil is slow-draining, and to reduce any buoyant effect the designers decided on a rectangular section. On the Vedado (east) side, the subsurface is principally rock of a serpentine variety. The Maramar side—and most of the riverbed—is silty. Thus, a flotation safety factor of 1:16 is built into the tunnel.

• **Open-cut method**—Because of the silty condition of the riverbed, the off-shore work was done in open-cut. Using a wellpoint system, the job was done in the dry all the way from shore to shore.

River traffic was another problem. In spite of the Almendares' shallow draft, there is a lot of barge and small craft traffic on the river. To keep this traffic moving at all times, the tunnel was built in two parts. When the western half was completed, the coffer-dam was pulled up and shifted to the other side.

• **Construction details** – After the swing bridge was dismantled and moved upstream to its new location, work started on the western section of the tunnel. The approach area was isolated from the tunnel area by a lateral wall or "membrane" of steel piling, which was driven 6 m. into the ground, about 21 m. east of the tunnel portal location. This permitted excavation of the approach while the coffer-dam for the west section was being pumped down.

Piles for the rectangular-shaped coffer-dam were driven in depths varying from 6 to 14 m., the latter figure being the depth at the lowest point of the tunnel slope. The coffer-dam itself is 88 m. long and 23 m. wide.

Braced by temporary steel superstructure, the walls of the coffer-dam were closed off at mid-stream by more sheeting, which was retained as end retainer for both coffer-dams. (The coffer-dam on the western side of the river used 355 lineal meters of sheet steel piling weighing some 1,750 metric tons.)

The interior of the coffer-dam was drained by 725 wellpoints of varying lengths and diameters.

Once drained, five power cranes and 21 trucks started excavating the approach and western half of the tunnel. Total excavation for the entire project is estimated at 75,000 cubic meters of earth and 16,000 cubic meters of rock. Some 1,500 wood piles were driven to support the section.

• **Removing pier**—A problem arose in the removal of the center pier of the swing-bridge that remained after the superstructure was removed and work on the coffer-dam had begun. Since the new vehicular tunnel followed the same route as the bridge, the pier was directly in the path of the coffer-dam. The problem was handled this way:

Approximately 6 m. west of the pier the same type of "membrane" as was used at the tunnel portal was installed. The coffer-dam was then extended approximately 6 m. east of the pier and a second membrane was installed. In this manner, the pier coffer-dam was isolated from the tunnel coffer-dam, and excavation and construction were started for the major part of the tunnel box, while the pier coffer-dam was being pumped down and the pier demolished and removed. When the latter work was completed, the membrane west of the pier site was pulled and the construction work for the tunnel box was extended up to the membrane east of the pier site.

The box-shaped tunnel has a uniform outside width of 19 m. It is split into two separate tubes, each with two lanes, with a width of 7.55 m. and a height of 4.5 m. In the separation wall there is an air duct 1.10 m. wide, and 4.0 m. high. Both tubes have a one-meter sidewalk at the inner wall for inspection, not for pedestrian traffic. The outer walls are 0.95 m. on the sides; 1.00 m. at the top, and 1.50 m. at the bottom.

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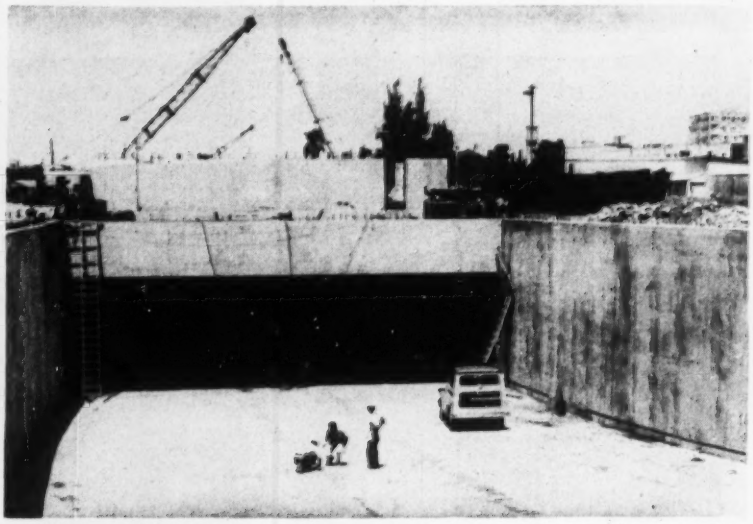


TUNNEL APPROACH is wider than most Havana streets, shows box-shape of section.

The approaches will narrow from 24.0 m. at street level to the tube mouth elevation 6.75 m. below grade. At this point the slab-anchor combination will be 3.35 m. thick.

The western (Maramar) approach is 148.7 m. long; the Vedado inclines 157.7 m. through rock. Some 29,370 cubic meters of concrete, batched at the site and containing 997 metric tons of reinforced bars, will go into the project. It will be tile-lined under cover, mason finished in the open.

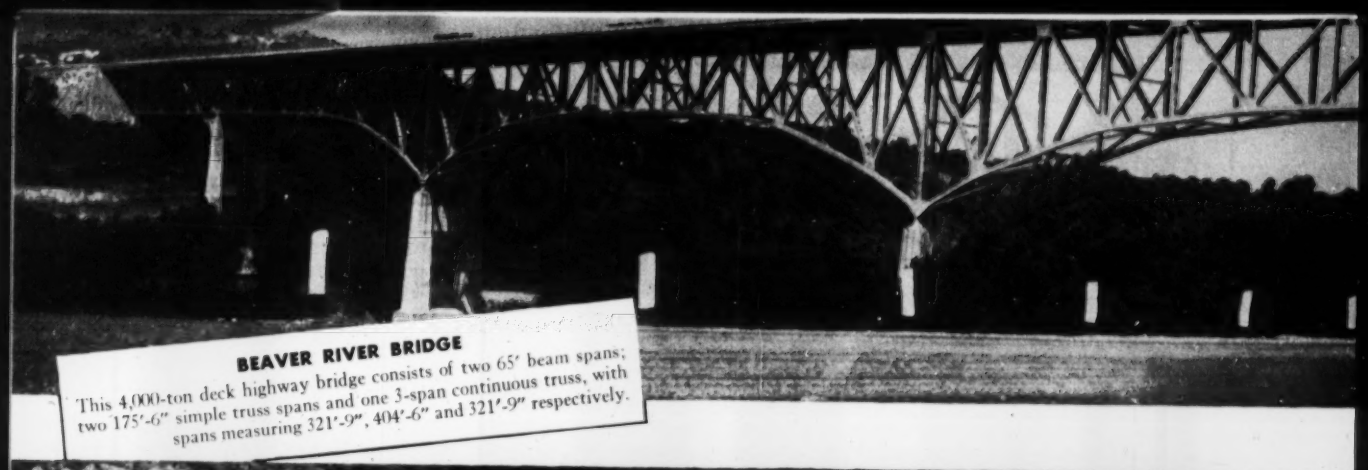
The ventilation towers are equipped with flood-proof blowers, two in each tower, each with a capacity of 75,000 cubic inches.

Illumination will be strongest at the portals and diminish to the midway low point during the daytime, and be reversed for safe night-time driving. Shadows and stereo effects will be eliminated by 880 eight-ft. recessed fluorescent units.

The tunnel was conceived and planned by the Comision de Fomento Nacional, Dionosio Suarez, director of engineering. Engineer Manuel Ray supervised work for the Comision. Engineering was done by Frederick Snare Corp., under the supervision of Andres Garganta and Bernardo Nunez, field engineers for the company. Construction was a joint venture of the Morr-Raymond Concrete Pile Company.

Asia's largest office building

Tokyo's new 1,200-room Marunouchi Building will house 8,000 office workers, is the largest office building in Asia. Construction of the ferro-concrete building, located across the street from the Tokyo Central Railway station, was begun in 1937. Postponed after the start of Japanese hostilities in Manchuria, the basement excavation served as a fire-fighting reservoir during the war. Eight main floors and a two-level basement add up to about 720,000 sq ft of floor space. Shimizu Construction Co. was the contractor.



BEAVER RIVER BRIDGE

This 4,000-ton deck highway bridge consists of two 65′ beam spans; two 175′-6″ simple truss spans and one 3-span continuous truss, with spans measuring 321′-9″, 404′-6″ and 321′-9″ respectively.

ALLEGHENY RIVER BRIDGE

This 5,000-ton deck highway bridge consists of a 4-span continuous deck plate girder with spans 104′-4″, 130′-5″, 130′-5″ and 104′-4″; (469′-6″ c.c. of end bearings) and a 5-span cantilever and suspension type truss with spans 266′-8″, 346′-8″, 346′-8″, 533′-4″ and 213′-4″; (1706′-8″ c.c. of end bearings).

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Our figures are based on a three-year analysis of field reports. We claim to be authorities—because Yeomans designed the first vertical wet pit pump ever built, and has been building them ever since.

This Lubri-Vac story is too long for telling here. There's a bulletin worth the attention of every pump user—sent on request.

Sealed for 20 Years—Still Going Strong

. . . Among many intriguing stories about Shone Ejector performance, there's one we especially like:

A Shone installed in one of Chicago's best known buildings was inadvertently sealed off during alterations; and because it had not been listed in the mechanical equipment inventory, it was not missed. Twenty years later, when further alterations broke into its concrete tomb, there was the doughty Shone, pumping away as rhythmically as the day it was installed. The faithful Shone!

The Yeomans Guard, published several times a year, is a compendium of news and useful information concerning the pumping of materials and the treatment of wastes, both domestic and industrial. We shall be pleased to send you the current issue if you'd care to have it.

A Yeomans "Package" Plant for Every Small Community...

A great many small communities are faced with a peculiarly difficult problem of how to treat small quantities of domestic sewage—a problem multiplied by the rapid increase in housing developments on the fringes of large cities. In most instances the cost of hooking up to the city's treatment plant is prohibitive; and heretofore there has been no truly practical method or equipment available.

"Heretofore," we said—because *now there is an answer* to the problem:

- Yeomans has developed a series of "package plants" engineered for populations of 50 to 2500 persons.

These plants are compact, simple, efficient—low in construction cost, low in operating cost. They require little operating attention—just normal good housekeeping and a few minutes a day of a handyman's time.

That term "Package" applies to the compact and convenient arrangement of several plant elements. Actually, each Yeomans plant is engineered to meet specific requirements. Whether it's a biological trickling filter or an activated sludge plant depends on the community's needs.

A bulletin now in preparation will be found most valuable and helpful. Write us to reserve a copy.

Small plants—high in efficiency, low in cost—are a Yeomans specialty.

Pneu-Pump Based on Old Principle

Water, oil, mud, paint, tar, acids, alkalis, sludge, molten metals, molten salts, slurries, abrasive liquids and any other "problem child" that pesters you: the Pneu-Pump will handle it—in extremely small volumes. Also this pump is immune to high temperatures; it will operate for years without attention; and its price is agreeably low.

It's a pneumatic pump, simple to manufacture, automatic in operation, practically fool-proof. What more do you process-industrialists want?

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Manufacturers of: Centrifugal Pumps and Pneumatic Ejectors for Buildings, Municipalities, and Industrial Applications, and a Full Line of Waste Treatment Equipment.

INTERNATIONAL

Push roads, not rails for South Africa transport

Because the industrial economy of the area apparently is not sufficiently developed to warrant a first-class railway service, South African governmental units should consider the construction of highways as a first means of improving communications, the British government has been advised recently.

A survey of proposals for a railway to link the Rhodesian and East African rail systems, and of possible lines of economic development for the area has just been completed by Sir Alexander Gibb and Partners, of London, and Overseas Consultants Inc., of New York.

The engineers' report followed up a report made in 1949, which expressed the view that the cost of the rail link would not be justified unless steps were taken to develop the areas traversed. The new survey concurred in this line of reasoning, adding that, since the development most likely in the area is agricultural, a road network would be essential before rail lines can be considered economically.

International briefs . . .

• **Israeli harbor work pushed**—The first stage of the "Kishon Development Scheme" for developing a new harbor for Haifa, will be completed this year at a cost of about $2.5 million. It will be 22 ft deep by 270 ft wide and 1.8 miles long. There also will be construction of quays to handle ocean-going ships. The new port, at the mouth of the Kishon River, is north of the old port of Haifa—principal port of entry for the country.

• **Highway work scheduled**—Government spokesmen in Guatemala have reported that work will be resumed in 1953 on the Guatemalan portion of the Inter-American Highway. The government has applied to U. S. sources for a $4-million loan to finance the work—suspended last year after the United States withdrew financial support in a dispute over contractual matters in that connection.

• **New dock for Guatemala**—With only one Caribbean port (Puerto Barrios) capable of handling ocean-going ships at dockside, Guatemala is planning construction of two more ports, at a cost of about $10 million. The new harbors would be built at Santo Tomas, and at the mouth of the Sarstoon River, on the British Honduras-Guatemala border.

Chief highway engineer served for 31 years

Philip H. Kitfield, chief engineer of the Massachusetts State Department of Public Works, has retired after 31 years of service.

Kitfield held the post of chief for the last six years while directing the state's biggest highway-building program. As chief of the engineering department, he reviewed all plans and specifications and handled the administrative duties of the program.

He also supervised field construction of such projects as the new Route 128, the Boston Central Artery, Fall River Expressway, new Route 1 to New Hampshire, the Lenox bypass, Route 15 in Sturbridge and other major projects financed by a $200-million bond issue.

Kitfield is a CE graduate of Dartmouth College. He was employed by the state public works department and has served as an engineer since 1921.

After serving as resident engineer on state construction projects, he was assigned to the office of the late F. C. Pillsbury, as first assistant. Later, he succeeded Pillsbury as project engineer to plan state highway construction jobs. Six years ago he was appointed chief engineer. He was active in the American Association of State Highway Officials, serving as a member of the executive committee.

Seattle council names new city engineer

Appointment of William E. Parker as city engineer at Seattle was confirmed by the city council last week.

Commander Parker, now serving as assistant to the director of training in the Seabee reserves at Seattle, will not be able to take charge of the department until he obtains his release from the Navy, which will probably be early next month.

Parker has been with the Navy much of the time since his graduation from Annapolis in 1935, although he served in several posts in the Washington state government at Olympia after World War II.

The council did not seek Parker's views on a $25-million sewage disposal project which had been proposed by Ralph W. Finke, the previous engineer, and opposed by Mayor Allan Pomeroy (ENR Dec. 4, 1952, p. 69). The city council so far has approved only the first $800,000 units of the program, which already are under construction.

COL. PAUL D. BERRIGAN, newly appointed division engineer, is in charge of the South Pacific division.

South Pacific division gets new engineer

Col. Paul D. Berrigan has been appointed division engineer for the South Pacific division, Corps of Engineers, with headquarters in San Francisco. He succeeds Col. Donald S. Burns who goes to a European command.

In his new position, Colonel Berrigan will be responsible for the Corps military and civil works construction in California, Arizona, Nexada, Utah and the Territory of Hawaii, plus the civil works construction in those areas of Wyoming, Colorado, and New Mexico, watersheds of which drain into the Pacific Ocean, and the Klamath River Basin in the state of Oregon.

A graduate of West Point, Colonel Berrigan was commissioned in the Corps in 1927. His first assignment was with the 3rd Engineers in Hawaii. Following a 3-year tour of duty, he attended the University of California at Berkeley and the Engineer School, Fort Belvoir, Va.

From 1932 to 1934, he was with the 2nd Engineers, Fort Logan, Colo. He then served a 4-year assignment as instructor for the Idaho National Guard.

In 1938 he moved to Portland, Ore., as assistant to the district engineer and in 1941 he was assigned a 2-year tour of duty as assistant to the division engineer at Dallas, Tex.

During World War II, Colonel Berrigan went overseas as chief, construction division, office of the chief engineer, European Theater. In 1946 he returned to the West Coast to serve as executive to the division engineer, Western Ocean division. In 1948 he became district engineer at Kansas City, Mo., and in 1950 went to the National War College, Washington, D. C. At the conclusion of his term there in 1951, Col. Berrigan was assigned to the office of the Joint Chiefs of Staff, Washington, D. C., where he has been Army assistant director, Joint Logistics Plans Group.

New Chicago department headed by Jardine

James W. Jardine, civil engineer, who Jan. 1 became the first commissioner of the newly organized Department of Water and Sewers in Chicago, is a municipal-government career man. He has been on the city staff for 15 years, starting as an assistant city traffic engineer in 1938 and climbing to his new post.

Jardine started his public service career in 1931 as an engineer with the Cook County Highway Department. Two years later he transferred to the Illinois Highway Department, where he worked as resident construction engineer and maintenance engineer.

He spent four years in the city's traffic department and then took a Civil Service examination for city paymaster. He finished first and served in that office from 1942 to 1950, when the mayor appointed him Public Vehicle Commissioner.

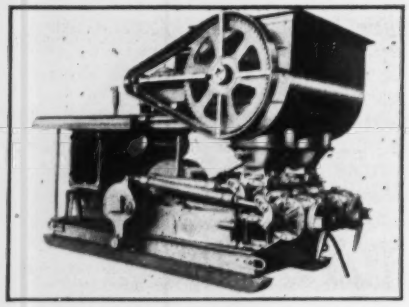
Jardine is a registered professional engineer and a registered land surveyor.

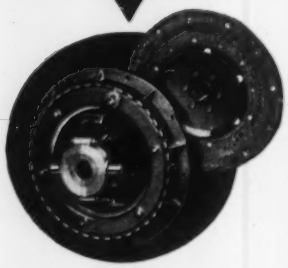
He belongs to the Western Society of Engineers.

Careers . . .

• **Appointed**—New general manager, engineering and construction division of Koppers Company, Inc., Pittsburgh, is **George M. Carvlin.** . . . Named vice-president in charge of engineering for the H. K. Ferguson Co. is **Francis W. Daniels,** a 28-year veteran of the company. . . . Canton, Ohio's new city engineer is **Leroy L. Luke,** an engineering department employee since 1943. . . . **Stanley Kimball** has taken over duties as assistant resident manager for Kaiser Engineers Division, Henry J. Kaiser Co., on its construction project at the Hanford plutonium works. . . . Officers of Baltimore Contractors, Inc., have announced the opening of a branch office in Washington, D. C., with **G. E.**

Carries, Lifts and Places





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MEN AND JOBS

Carlstrand, vice-president, as manager.

Named acting chief engineer of the Massachusetts Department of Public Utilities, with headquarters in Boston, is **Stanley W. Ellis,** recently engineer of the department's gas, electric and water division. . . . Election of **S. W. Flesheim** as chairman of the board and of **E. L. McFalls** as president has been announced by directors of the Master Builders Co., Cleveland. A founder of the company, Flesheim has been president since 1914.

• **Elected**—Named president of Bird Construction Co., Regina, Sask., is **Donald S. MacDonald,** who succeeds H. J. Bird, now chairman of the board. . . . **Jack B. Hudson** has been installed as president of the Fort Worth chapter, Texas Society of Professional Engineers. . . . President of the Memphis chapter, Associated General Contractors, is **John Cassidy** of Seth E. Giem & Associates. . . . Directors of the Builders' Association of Metropolitan Detroit have announced the election of **M. M. Robinson** as president. . . . **Frank J. Lorenz,** of the Lorenz Equipment Co., will take over the top post of the Columbus, Ohio, Builders' Exchange.

• **Retired**—**Lt. Gen. Lewis A. Pick** winds up his extended tour of duty as chief of the Corps of Engineers Jan. 31 (ENR Nov. 13, p. 88). Pick's successor is **Maj. Gen. Samuel D. Sturgis.** . . . **Robert M. Belt** retired last month after five years as superintendent of public works for the Territory of Hawaii and chairman of the Board of Harbor Commissioners. **Robert B. Montgomery** has been named temporary superintendent.

With his task completed as staff director for the House subcommittee to study civil works, **Charles D. Curran** has returned to his permanent position as senior specialist on engineering and public works in the legislative reference service of the Library of Congress. . . . **Howard M. Anderly** of the St. Paul District, Corps of Engineers, has retired after 41 years service.

After 33 years with the Chesapeake and Ohio Railway Company, **C. H. Chapin** retired last month as the company's bridge engineer. . . . **Kenneth W. Morton,** federal department of public works district engineer of New Westminster, B. C., has retired after 40 years service. . . . **George E. Martin** has announced his retirement as consulting engineer, paving materials section, Barrett Division, Allied Chemical & Dye Corp.

OBITUARIES

Richard F. Giersch, 62, head of the Giersch Engineering Co. of Miami, Fla., died Dec. 29. A graduate of North Carolina State and the University of South Carolina, Mr. Giersch's first engineering job was on the Panama Canal. He also worked as an engineer in Spain and South America and served in the U. S. Army Engineer Corps during World War I. He established his engineering firm in Miami in 1925.

Harry Alterman, 61, president of Harry Alterman, Inc., builders, died Dec. 20 in Philadelphia, where he had been in business since 1921. In recent years he was noted for his design and construction of many motor truck terminals. His firm specialized in industrial and commercial construction work.

John H. Berkebile, 85, contractor, died Dec. 29 in Toledo, Ohio. He entered the contracting business with Henry J. Spicker Co., of which he was president from 1914 until 1921. Mr. Berkebile then organized his own business and was responsible for the construction of many of Toledo's largest and finest buildings.

Richard I. Yeager, 42, senior planner of the Columbus Urban Redevelopment Authority, died Jan. 1 in Cleveland. He was graduated from Ohio State University in 1934 and later was granted a fellowship at Cornell University where he received his master's degree in 1938. He was working on possible redevelopment plans for the Goodale Slum Clearance Study.

Raymond V. Warren, 65, secretary of the Ready-Mixed Concrete Association of Metropolitan Pittsburgh, died Dec. 29 in Bellevue, Pa. He was engineering representative of the West Pennsylvania Sand and Gravel Association, and a former township engineer of the Pennsylvania State Highways Department.

Philip T. Samuel who was with the Army Corps of Engineers for 42 years, died at New Orleans, La., Dec. 26. He was responsible for the design and construction of all major items of floating plants. One wartime project completed under his direction was the $80-million Defense Plant Corp tug and barge program. He also directed training of military crews for port repair ships, and he supervised work on four seagoing hopper dredges, a $19-million project.

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Coffing Safety-Pull Ratchet Lever Hoists Ten models—capacities from 1,500 lb. to 15 tons.

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Heavy-duty construction keeps Coffing Safety-Pulls on the job...out of the repair shop. Hoist frame and handle are certified malleable iron. Sprocket and ratchet are special alloy, heat treated for longer life. These and other construction extras keep Safety-Pulls working under hard, continual use.

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BOOKS

Ancient roads

PUBLIC ROADS OF THE PAST: 3500 B.C. TO 1800 A.D.—By Albert C. Rose, 101 pp. Published by the American Association of State Highway Officials, 917 National Press Bldg., Washington 4, D. C. $3.00.

This large pamphlet contains reprints of articles on roads and related subjects that were published in issues of AMERICAN HIGHWAYS between April, 1944, and the end of 1949, under anonymous authorship of "The Old Roadbuilder." A foreword to the pamphlet reveals that the author is Albert C. Rose, highway engineer and historian of the Bureau of Public Roads.

A vast amount of research went into the preparation of these articles, which cover a period estimated by Mr. Rose as having begun about 3500 B.C. and which extend up to the year 1800 A.D.

Although there is evidence to support the conclusion that stone or cobble pavements were laid as far back as 3500 B.C., Mr. Rose concludes that the first scientific roadbuilding was that of the Romans. Most famous of these roads is the Appian Way, built in the period 578-534 B.C. It extended from Rome to Hydruntum at the tip of the heel of the Italian "boot", a distance of 412 miles. A detailed description of it is given in Chapter V.

In addition to information about roads, the pamphlet contains descriptions of Italian road-building tools, of old surveying instruments and methods, of early vehicles, and of the development of wheel gages. There also are chapters on pioneer road builders with descriptions of their designs and methods of construction, and on how right-hand passing became the rule of the road in this country.

Each chapter is copiously illustrated, with small cuts along the page margins.

The entire collection is remarkable for its scope but the small size of the cuts (about the size of a large postage stamp) does not give the illustrations proper display. It is to be hoped that some day the American Association of State Highway Officials will find it possible to reproduce the text and illustrations in book form where the cuts and drawings, especially the maps, can be reproduced in large size.

The AASHO plans a second publication to include articles on road developments in this country that began appearing in the January, 1950, issue of AMERICAN HIGHWAYS.

REPORTS AND PAMPHLETS

PUBLICATIONS OF THE INTERNATIONAL ASSOCIATION FOR BRIDGE AND STRUCTURAL ENGINEERING—Twelfth Volume, 1952. Published by Verlag Leemann, Stockerstrasse 64, Zurich 39, Switzerland.

TORNADO OCCURRENCES IN THE UNITED STATES—Technical Paper No. 20, Weather Bureau. Superintendent of Documents, Washington 25, D. C. 35¢.

DYNAMIC INFLUENCES OF SMOOTHLY RUNNING LOADS OF SIMPLY SUPPORTED GIRDERS—By Arne Hillerborg. Institutionen For Brobyggnad, Meddelande Nr. 4, Stockholm, Sweden.

PLANE COORDINATE PROJECTION TABLES—Special Publication No. 284 (Iowa), Special Publication No. 285 (Kansas), Special Publication No. 286 (Nebraska), Special Publication No. 287 (Oklahoma), Special Publication No. 288 (Wisconsin). Obtainable from Superintendent of Documents, Washington 25, D. C. 20¢ each.

WELDABILITY OF METALS—Reprinted from Ninth Edition Procedure Handbook of Arc Welding Design and Practice. The Lincoln Electric Co., Cleveland 17, Ohio. 50¢.

A COMBINED PLAN FOR A LIBERAL EDUCATION IN ENGINEERING—School of Engineering, Columbia University, New York City 27, N. Y.

ROADS TO NATIONAL SECURITY—National Highway Users Conference, National Press Building, Washington 4, D. C.

PROBLEMS OF AERODYNAMIC AND HYDRODYNAMIC STABILITY—By D. B. Steinman. Reprinted from Proceedings of the Third Hydraulics Conference, Bulletin 31, University of Iowa Studies in Engineering. Obtainable from the author at 117 Liberty St., New York, N. Y.

PROCEEDINGS OF THE THIRTEENTH ANNUAL HIGHWAY ENGINEERING CONFERENCE—Bulletin No. 53 of the Utah Engineering Experiment Station Department of Civil Engineering, University of Utah, Salt Lake City, Utah.

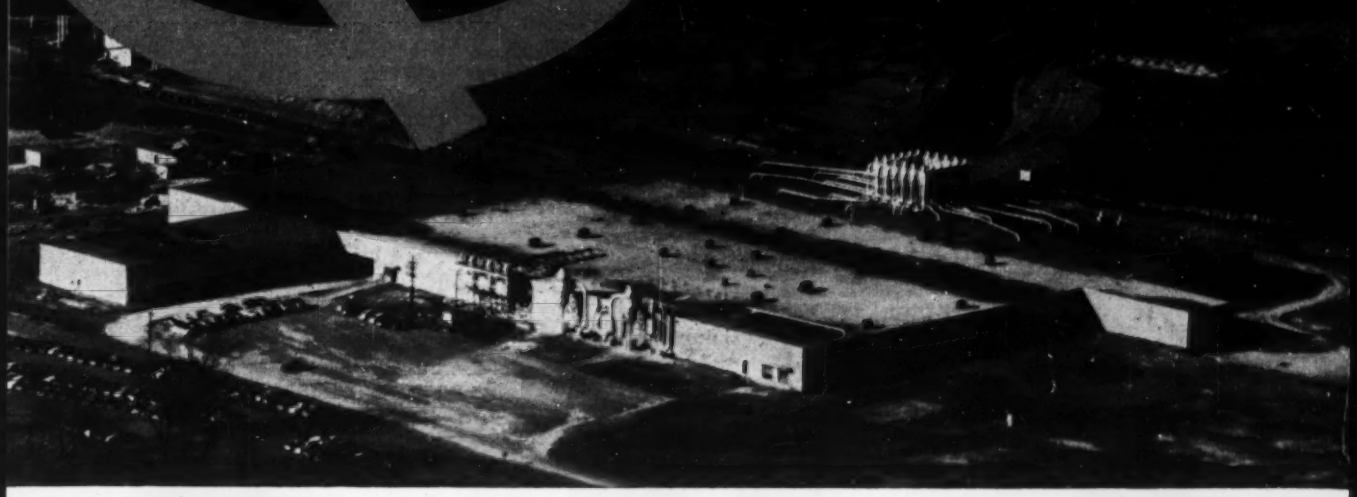
EFFECTS OF COMMUNITY-WIDE INSTALLATION OF HOUSEHOLD GARBAGE GRINDERS ON ENVIRONMENTAL SANITATION—Public Health Service, Washington 25, D. C.

EXPERIMENTAL INVESTIGATION OF STRESSES IN GUSSET PLATES, Bulletin No. 16. Engineering Experiment Station, The University of Tennessee, Knoxville, Tenn.

PROCEEDINGS OF THE THIRD CALIFORNIA CONFERENCE ON STREET AND HIGHWAY PROBLEMS, The Institute of Transportation and Traffic Engineering, University of California, Berkeley, Calif., $1.00.

HOW TO ANTICIPATE PLANT EXPANSION

Q-PANELS



Air view of the FORMICA COMPANY'S building. Walls of Q-Panel were detached, moved forward and used again on the addition. A Q-Panel wall has the quality of a permanent wall but with the additional advantage of being removable to provide for plant expansion.

Close-up of the FORMICA plant shows the neat and attractive design formed by continuous Q-Panel fluted texture. Architects have achieved a great variety of design by combining Q-Panels with other materials for decorative effect.

From left to right—Mr. D. J. O'Conor, President of the FORMICA COMPANY, Mr. A. M. Kinney, President of A. M. Kinney, Inc., which designed the FORMICA plant and Mr. George H. Clark, Vice President in charge of engineering of the FORMICA COMPANY.

The FORMICA COMPANY built its new Cincinnati plant with Q-Panel walls, later removed the Q-Panels from two sides and re-used them on the addition. Note, in the air view, the older section has a lighter colored roof than the newer section.

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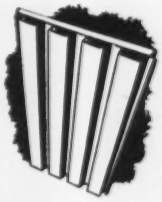

Q-PANEL FACTS

MATERIALS—Metallic-coated Steel, Galbestos, stainless steel, aluminum on one or both sides.

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WEIGHT—Varies with metals selected but averages 4½ lbs. per square foot.

INSULATION VALUE—Superior to 12" of masonry with furred plaster. U-Factor—.14 B.T.U. in aluminum—.18 B.T.U. in steel.

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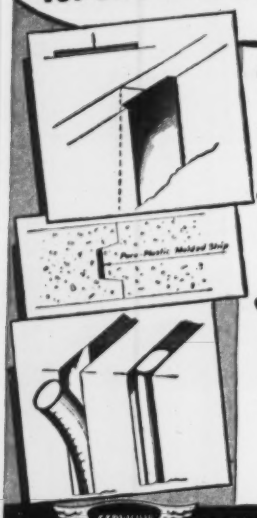

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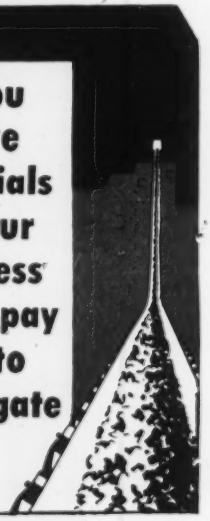

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LEGAL

Agreement to protect property from damage

An action was brought[1] by the owner of real property against a contractor to recover damages for injury to the property caused by excavation and blasting done in connection with the contractor's work.

The contractor performed excavation work on the property adjacent to that owned by plaintiff. The excavation contract provided that the contractor "shall protect the owners of adjacent property from injury arising from the carrying out of this contract, and shall make good any such damage and injury * * *".

The trial court rendered a judgment in favor of the property owner, which judgment was affirmed on appeal. The Appellate Court in its opinion stated: "The cause of action is based solely on contract, not in negligence or nuisance, and no question of indemnity is involved. The contract provision, which is the basis of the action, was made directly for the benefit of a class to which plaintiffs belonged. Cherry v. Mount Vernon Contracting Co., 278 App. Div. 769, 104 N.Y.S. 2d 69; McClare v. Massachusetts Bonding & Insur. Co., 266 N.Y. 371, 195 N.E. 129."

(1) Vance v. Yonkers Contracting Co., 113 N.Y.S. 2d 733, 280 App. Div. 839, Supreme Court, Appellate Division, Second Department, New York, June 30, 1952.

Right to rescind contract

"A party entitled to rescission on the ground of fraud may either avoid the transaction or confirm it; he cannot do both; and once he elects, he must abide by his decision. When he has discovered the fraud, or has been informed of facts and circumstances from which such knowledge would be imputed to him, he must thereupon act with diligence and without delay if he desires to rescind; and the transaction will be deemed ratified if he does any material act which assumes the transaction is valid. His continued dealing with the property purchased, after knowledge of the fraud, as if the contract were subsisting and binding, is evidence of an election to treat the contract as valid; so, also, is the payment of the purchase money after such knowledge."[1]

(1) Ajamian v. Schlanger, 89 A. 2d 702, Superior Court of New Jersey, Appellate Division, July 1, 1952.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Me., Limestone**—SERVICE CLUB—B.A. 1/30—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., service club, post exchange, B.O.Q. No. 2, gymnasium, Limestone Air Force Base, Eng. 19-016-53-56. $1,000,000. Plans deposit $25, refundable. Alonzo J. Harriman, Inc., 292 Court St., Auburn, archts. CD 12/18.

BIDS ASKED—BUILDINGS

▲ **Mass., Taunton**—SCHOOLS—B.A. 2/25—City, P. School Dpt., Supt. Schools Office, Harold H. Galligan, West Side Elementary School adjacent to West Side Playground, $800,000; brick, steel, elementary school, Oak St., $400,000. Architects Collaborative, 96 Mt. Auburn St., Cambridge, archts. CD 4/18/52.

SOON LETS CONTRACT—BUILDINGS

▲ **Mass., Medford**—DORMITORY—At office Arthur Anderson, 112 Water St., Boston, soon lets contract, men's dormitory on campus, for Tufts College, Admin. Office, President's Office, Medford, Mass. $1,065,000. Plans deposit $50, refundable. Extended date. Arland A. Dirlam, 673 Boylston St., Boston, archt. CD 12/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Raymond Concrete Pile Co.,** 13 St. James Ave., Boston, Mass. CA. **$4,658,670,** est. $4,500,000. Contr. 8, constr. Pier No. 1, East Boston, BOSTON, MASS. Commonwealth of Mass., Port Boston Auth., Commonmonwealth Pier No. 5, South Boston, Mass. CD 12/22, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Platt Constr. Co., Inc., 99 First St., Cambridge,** Mass. CA. **$1,961,000.** 200 HOUSING units, Proj. Mass. 7-4, NEW BEDFORD, MASS. New Bedford Housing Auth., Presidential Heights, New Bedford, Mass. CD 1/5, under LB.

▲ **Canter Constr. Co.,** 185 Corey Rd., Brookline, Mass. CA. **$2,225,000,** est. $2,000,000. MAINTENANCE and TRAFFIC DEPOT and LABORATORY, Jcts. of Rtes. 128 and 9, WELLESLEY, MASS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Dec. 30, awarded Jan. 9. CD 1/6, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

PENNSYLVANIA—B.A. 2/3—Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg,

Montgomery Co.—structures, grading, drainage, paving, Turnpike Sect. 33A, part of Delaware River Pennsylvania Turnpike Exten. in Whitemarsh and Upper Dublin Twps. Plans deposit $5; adv. ENR 1/15. CD 10/26/50.

Pa., Scotland—SWIMMING POOL—B.A. 2/4—General State Auth., 18 and Herr Sts., Harrisburg, indoor swimming pool for Scotland School for Veterans Children. $180,000. Plans deposit $10. E. G. Good, Jr., 904 N. 2nd St., Harrisburg, archt. A. F. Jones, c/o owner, ch engr. CD 6/27/50, under Public Buildings.

D. C. Wash.—B.A. 2/11—District of Columbia, Director Hys., District Bldg., 14 and E Sts. N.W., Zone 4, constr 2 rein-con. of rigid frame type bridges on New York Ave. N.E., bridge over Pennsylvania R.R. has 6 spans with approx. overall length of 334 ft.; bridge over South Dakota Ave. N.E. one span 66 ft. 11 in. clear. Plans deposit $20; adv. ENR 1/22. CD 2/12/52.

BIDS ASKED—BUILDINGS

† **Md., Edgewood**—WAREHOUSES—B.A. 1/30—U. S. Eng., 24 St. and Maryland Ave., Baltimore, two 60x150 ft., one 60x300 ft., rein.-con., concrete block, steel storage warehouses, exterior utilities, parking area, Army Chemical Center, Eng. 18-020-53-63. $500,000. Plans deposit $10. CD 1/8.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Lynn Constr. Corp.,** 11 W. 42 St., New York 36, N. Y. CA. **$1,483,213,** Contr. 1, structures, Contr. 2, electrical work, Contr. 3, heating and ventilating, Contr. 4, plumbing for constr. of Marine Loading Station, North Shore, Queens Boro, NEW YORK. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Dec. 3, awarded Dec. 15. CD 11/10.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

Johnson, Drake & Piper, Inc., 86 Trinity Pl., New York, N. Y., CA. **$1,474,796,** 12 bridges and culverts incidental grading, paving Route 44 Relocation, Sections 15A and 16A from Nehonsey Brook to South Branch of Little Timber Creek in Greenwich and Logan Twps., F-122 (10), Gloucester Co. Bids Dec. 9, awarded Jan. 2. CD 12/15, under LB.

▲ **PENNSYLVANIA**—State Hy. & Bridge Auth., 506 N. Office Bldg., Harrisburg,

Nello L. Teer, Box 1131, Durham, N. C., CA. **$4,058,716,** est. $1,640,000, constr. 36,901 ft. crushed aggregate base with bit. surf., 14 rein.-con. and 3 steel structures, Rte. 202-100 By-Pass around West Chester, Chester Co.;

Dinardo, Inc., 331 Bouquet St., Pittsburgh, Pa., CA. **$844,395,** constr. portion downtown interchange on Penn-Lincoln Parkway, incl. alterations 22nd St. bridge and 1,153 ft. rein.-con. pavement, Allegheny Co.;

Larry Constr. Co., Pittsburgh, Pa., CA. **$517,764.** five rein.-con. retaining walls, substructure of bridge over 2nd Ave., 2,226 ft., a sect. of Penn Lincoln Parkway Proj., Allegheny Co.;

Hempt Bros., R.D., Camp Hill, Pa., CA. **$713,547.** constr. 9,101 ft. rein.-con. pavement 24 ft wide on each side of 4 ft divisor; 1 deck I-beam and 1 rigid frame rein.-con. bridge, sect. of York Expressway, Cumberland Co. Grand total $6,134,422. Bids Dec. 19, awarded Jan. 6. CD 12/23, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore,

George & Lynch, Inc., Delaware Trust Bldg., Wilmington, Del. LB. **$689,243.** grading, drainage, surf. 2.624 mi. dual hy. U.S. Rte. 50 Salisbury to Mardella, Contr WI 119-7-115, Wicomico Co. Bids Jan. 6. CD 12/17.

† **MARYLAND**—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va.,

Wright Contg. Co., 504 25 Ave., Columbus, Ga. CA **$714,118.** c. conc. 3.151 mi. from Defense Hy. to Good Luck Rd., Baltimore-Washington Parkway, Proj. 1B5-C4, Prince Georges Co. Bids Dec. 19, awarded Jan. 6. CD 12/24, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Warshaw Constr. Co.,** 101 Park Ave., New York 17, N. Y., CA. **$4,863,000,** altering Brooklyn Central LIBRARY, BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Oct. 22. CD 12/9, under LB.

Euclid Contr. Corp., 101 Park Ave., New York 17, N. Y. CA. **$876,610,** new DEPARTMENT REPAIR SHOPS, Kent Ave., BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Nov. 26. CD 12/5, under LB.

Conestoga Constr. Corp., 151 Montague St., Brooklyn 2, N. Y. CA. **$811,664,** Bird S. Coler Memorial HOSPITAL and HOME SPECIALTY SERVICE WING, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Nov. 12. CD 12/9, under LB.

Anderson-Fischer Assoc., 493 Hempstead Turnpike, Elmont, N. Y., LB **$810,000,** general constr. Maywood Terrace HOUSING, Proj. N. Y. 10-2, WATERTOWN, N. Y. Watertown Housing Auth., Eastern Blvd., Watertown, N. Y. Sargent-Webster-Crenshaw & Folley, 310 Watertown Natl. Bank Bldg., Watertown, N. Y., archts. Bids Dec. 15. CD 11/13.

H. B. Alexander & Son, Inc., 315 Vaughn St., Harrisburg, Pa., LB **$665,663,** general constr. Junior and Senior HIGH SCHOOL for Green Park Union School Dist., LOYSVILLE, PA. State Public School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Jan. 8. CD 12/5.

Geo. F. Hazelwood Co., Cumberland, Md. LB. **$264,738.** OFFICE, SHOPS and STORAGE bldg., on Rte. 49 2 mi. west of Cumberland, Contr. A 429-2-615, MARYLAND State Rds. Comn., 108 E. Lexington St., Baltimore 2, Md. Bids Dec. 30. CD 12/10.

Manchester Constr. Co., 149 Equitable Bldg., Baltimore, Md. Owner Builds, **$357,000.** forty-two 2 story, 16x32x20 ft. row type HOUSES, 500 block Lakefield Rd., 7400 and 8400 blocks Manchester Rd., 600 block Adlworth Rd., BALTIMORE, MD.

The East Constr. Co., 514 St. Paul Pl., Baltimore, Md. CA. **$880,500.** one hundred and fourteen 2 story, 16x32x29 ft., brick row type HOUSES, 1900 blocks Barry Rd. and Armco Way, 7900 and 8000 blocks Kawanagh Rd., BALTIMORE, MD. Armco Realty Co., 514 St. Paul Pl., Baltimore, Md.

† **The Construction Co. of Maryland, Inc.,** 1010 St. Paul St., Baltimore, Md. LB. **$749,770.** three 3 story, 36x235 ft., rein.-con., concrete block bachelor officers' QUARTERS, Eng. 18-020-53-35, FORT GEORGE G. MEADE, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Jan. 6. CD 12/17.

H. O. MacCulloch, 319 Madison Ave., Willow Grove, Pa., Separate Contracts. **$300,000.** RESIDENTIAL DEVELOPMENT, Maple Ave., ABINGTON, PA.

† **U. S. Eng.,** P.O. Box 1715, Baltimore 3, Md. cancelled bids to have been opened Jan. 22, mounded concrete IGLOOS, Letterkenny Ordnance Depot, Chambersburg. Serial No. ENG 18-020-53-37, LETTERKENNY, PA. CD 1/7.

▲ † **George Hyman Constr. Co.,** 1010 Vermont Ave. N.W., Wash., D. C., LB. **$4,375,000** RECEIVING BLDG. R1 and R2, St. Elizabeth's Hospital, WASH., D. C. General Services Admin., P. Bldgs. Service, General Services Bldg., Wash,. 25, D. C. Bids Jan. 8 CD 12/30.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

SOUTH

BIDS ASKED—BUILDINGS

▲ **S. C., Honea Path, York and Williamston**—HOUSING—B.A. 1/28-South Carolina Reginal Housing Auth. No. 1, Laurens, housing, projects SC 8-45, 8-46, 8-39, 8-40, 8-35 and 8-36. $1,000,000. James M. Hunt, Elberton, Ga., archt. CD 4/1, under S. C., Honea Path, and CD 6/21/51 under S. C., York.

S. C., Iva, Pendleton and Westminster—HOUSING—B.A. 1/30—South Carolina Regional Housing Auth. No. 1, Laurens, housing, Projects, SC 8-27, 8-28, 8-23, 8-24, 8-33 and 8-34. $700,000. Extended date. James M. Hunt, Elberton, Ga., archt. CD 12/8.

▲ **Tenn., Manchester**—HOUSING—B.A. 1/30—Manchester Housing Auth., Manchester, housing, Projects Tenn. 28-1 and 28-2 $1,000,000. Extended date. CD 1/6.

▲ **Va., Alexandria**—RESEARCH PLANT—Bids Asked Perry M. Duncan, archt., 121 E. 54 St., New York, N. Y., 1 story, 210,000 sq. ft. research plant for Melpar, Inc., 452 Swann Ave., Alexandria, $3,000,000.

Va., Arlington—APARTMENT—Bids Asked—Stanley W. Korman, 3307 Fessenden St. N.W., Wash., D. C., 3 story, 32-unit brick, concrete masonry apartment. $300,000. Joseph Miller, 1112 13th St. N.W., Wash., D. C., archt.

SOON LETS CONTRACT—BUILDINGS

▲ **Fla., Jacksonville**—HOSPITAL WING—St. Vincent's Hospital, c/o Reynolds, Smith & Hills, archts., 227 Park St., soon lets contract hospital, wing, $2,000,000. CD 12/19/51.

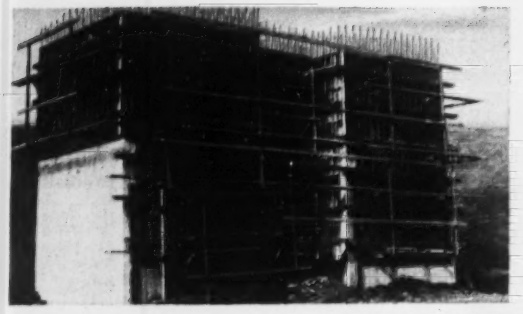
S. C., Gaffney—PLANT—Freezer Shirt Corp., Gaffney, soon lets contract mfg. plant. $85,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **WEST VIRGINIA**—W. Va. Turnpike Comn., Charleston,

Oman Constr. Co., Acklen Park, Nashville, Tenn., LB. $1,258,603, grading 5 mi. from Ghent, northward, Contract No. 9, Raleigh Co. Bids Jan. 6. CD 12/5.



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▲ Sullivan, Long & Hagerty, Bessemer, Ala., LB, $752,737, filter plant addn.;

Hardaway Contg. Co., 15 11 St., Columbus, Ga., LB, $456,238, raw water pumping station addn. AUGUSTA, Ga. City, City Hall, Augusta, Ga. Bids Jan. 6. CD 12/16.

BUILDINGS

LOW BIDS AND CONTRACTS

† Southern Constr. Co., Daniel Field, Augusta, Ga., CA, $935,617, MPTC CLASSROOM BLDG., Inv. 53-8, CAMP GORDON, GA. U. S. Eng., 200 Julian St., Savannah, Ga. Bids Dec. 23. CD 1/6, under LB.

▲ Stone & Webster Eng. Co., 49 Federal St., Boston, Mass., CA, $4,500,000, Riverside ELECTRIC GENERATING STATION addn., SAVANNAH, GA. Savannah Electric & Power Co., 27 W. Bay St., Savannah, Ga.

▲ Farnsworth & Chambers Co., P. O. Box 332, New Orleans, La. LB $4,593,995. HOUSING, Proj. LA 1-10, NEW ORLEANS, LA. New Orleans Housing Auth., 1111 Tulane St., New Orleans, La. Bids Jan. 6. CD 12/16.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† Wis., Madison—READINESS HANGAR—B. A. About 2/8—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, readiness hangar with shops at Truax Air Force Base, Eng. 47-013-53-33. CD 6/27/51.

Ohio—LIGHTING FACILITIES—B.A. 2/10—State Hy. Dpt., Columbus, lighting facilities 3.998 mi. S.R. Nos. 2 and 283, City of Cleveland, CUY-2-19.51 and CUY-283-(1.09-1.19), Cuyahoga Co. Plans deposit $2.75.

† O., Columbus—MAINTENANCE SHOP—B.A. On Or About 2/26—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., 160x253 ft. concrete masonry block, steel frame base maintenance shop, Lockbourne Air Force Base, Serial No. ENG 46-022-53-33. Plans deposit $10.

† O., Columbus—DOCKS—B.A. On Or About 2/27—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., five 88x295 ft. trussed steel frame multi-purpose docks (wing hangars), Lockbourne Air Force Base, Serial No. ENG 46-022-53-34. Plans deposit $15.

† O., Columbus—STEAM HEATING PLANT—B.A. On Or About 3/5—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., 38x40 ft., concrete masonry block central heating plant Lockbourne Air Force Base, Serial No. ENG 46-022-53-32. Plans deposit $5.

BIDS ASKED—BUILDINGS

▲ O., Cincinnati—RESIDENCES—B.A. 2/5—Cincinnati Metropolitan Housing Auth., 595 Armory Ave., 336 two story bsmnt., frame residence, Beekman St., north of Fricke Rd. $3,600,000. Plans deposit $40. Bernard Pepinsky, Union Trust Bldg., archt. Edward Larson, 2nd Natl. Bank Bldg., engr. CD 4/10.

† O., Warren—MAINTENANCE SHOP—B.A. On Or About 2/13—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., 1 story, 98x400 ft., concrete block maintenance shop, Lordstown Ordnance Depot, Serial No. ENG 46-022-53-31. Plans deposit $10.

† Wis., Antigo—MESS HALL—B.A. About 2/14—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, mess hall exten., Eng 47-013-53-34.

† Wis., Osceola—MESS HALL—B.A. About 2/14—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, mess hall exten., Eng 47-013-53-35

O., Euclid—SCHOOL—B.A. 2/17—B. Educ., Euclid, 1 and 2 story, brick Russell Erwine Elementary School, E. 246 St. $850,000. Plans deposit $15-20. Fulton, Krinsky & Dela Motte, 6014 Euclid Ave., Cleveland, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—Ohio Turnpike Comn., 361 E. Broad St., Columbus,

Harrison Constr. Co., 1101 Western Ave., Pittsburgh, Pa., CA. $3,519,250, 5.2 mi. of four-lane highway, linking Ohio Turnpike with Pennsylvania Turnpike, Mahoning Co. Bids Jan. 3, awarded Jan 6. CD 1/6, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Max Sabaroff & Co., 14209 Wyoming St., Detroit, Mich. CA Est. $350,000. first stage, extensive alterations to FINE ARTS BLDG., DETROIT, MICH. City, W. A. Bostwick, mgr. Detroit Institute Fine Arts, 5200 Woodward St., Detroit, Mich. Bids Dec. 23. CD 12/11.

▲ A. W. Kutsche & Co., 2924 W. Grand Blvd., Detroit, Mich. LB. $5,659,000. Edward J. Jefferies HOMES, incl. five 14 story, brick, steel apartments, 560 family units, Proj. Mich. 1-7A, Bids Area No. 4, DETROIT, MICH. Detroit Housing Comn., H. J. Durbin, secy., 409 Griswold St., Detroit, Mich. Bids Jan. 7. CD 11/28.

American Seating Co., H. M. Taliaferro, pres., Grand Haven, Mich. Own Forces. $100,000. remodel former Macy Co. plant into FACTORY, etc. GRAND HAVEN, MICH.

Atkin-Fordon Co., 7360 W. Chicago St., Detroit, Mich. CA Est. $300,000. brick Wellington Elementary SCHOOL, Erie and Lake Twps., ROSEVILLE, MICH. Bd. Educ., School Dist. No. 5, Roseville, Mich. CD 12/1.

▲ **Ranch Homes, Inc.,** 625 S. Hunter Blvd., Birmingham, Mich. CA. Est. $3,000,000. 1 story, brick ranch HOMES, on 260 acre development, Adams and Square Lake Rds., TROY, MICH. Fred Blackwood Co., 627 S. Hunter Blvd., Birmingham, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

† **N. M., Albuquerque**—MEDICAL PERSONNEL—B.A. 1/29—U. S. Atomic Energy Comn., c/o Ch. Supply Branch, Box 5900, Sandia Base, Phase II medical and personnel bldg., Inv. no. 293-53-21. $200,000. Extended date. CD 12/3.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Galveston**—WAREHOUSE—Galveston Wharves, c/o E. H. Thornton, 2324 Strand St., soon lets contract, cotton warehouse, $1,000,000; machine and garage shop, $200,000. CD 11/25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Metropolitan Paving Co.,** Box 3868, Oklahoma City, Okla., LB $210,817, construction and asph. paving roads and parking areas, incl. rein.-con. culverts, Altus Air Force Base, Inv. No. Eng 34-066-53-65, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Dec. 30. CD 12/18.

† **Cunningham & Show and Hovenkamp Constr. Co.,** Rte. 9, Box 317, Fort Worth, Tex., LB $61,648, est. $64,890, constr. access roads at Benbrook Dam and Reservoir, Clear Fork of Trinity River, Inv. 41-443-53-28, TEXAS. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Jan. 7. CD 12/30.

† **Rednall Constr. Co.,** Waxahachie, Tex., LB $313,928 est. $349,519, sump excavation and strengthening portion of East Levee, Dallas Floodway, CIVENG 41-443-53-23, TEXAS. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Jan. 7. CD 12/12.

Oliver Constr. Co., 820 Tennessee St., Amarillo, Tex. CA. $88,894. constr. some allied bldg. facilities for television station, AMARILLO, TEX. KFDA Radio Station, 109 E. 5th St., Amarillo, Tex. Ward & Chisholm, 721 W. 7th St., Amarillo, Tex., archt. CD 10/8.

McKinney Bros. Constr. Co., Pt. Lavaca Hy., Victoria, Tex., LB $76,535. sanitary sewers, some general street imprvs. of drainage, VICTORIA, TEX. H. A. Jamison, Victoria, Tex. Bids Jan. 7. CD 12/18.

Gulf Coast Oil Field Maintenance Co., Houston Hy., Victoria, Tex., LB $116,553. street grading, concrete curbs and gutters, asph. surf. and water distr. lines, VICTORIA, TEX. H. A. Jamison, Victoria, Tex. Bids Jan. 7. CD 12/18.

† **U. S. Eng.,** 100 W. Vickery St., Fort Worth, Tex., cancelled bids to have been opened Jan. 20, sanitary sewage treatment plant, James Connally Air Force Base, Eng 41-443-53-29, WACO, TEX. CD 1/6.

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver,

Brown Constr. Co., 1530 E. Abriendo Ave., Pueblo, Colo., CA, $435,188, est. $494,218, plant mix asph. surf. 5.135 mi. Colo. Proj. F 022-2 (6), Unit No. 2, Durango and Bayfield, La Plata Co. Bids Jan. 6. CD 12/31.

COLORADO—State Hy. Dpt., Denver,

Hunt Constr. Co., Steamboat Springs, Colo., CA, $108,770, est. $154,219, grading, structures, surf. 16.425 mi. SH No. 80 from Junction of SH No. 10 to Top of Slick Rock Hill Colo. Proj. AA-1 Section 6, Colores and Sam Miguel Counties;

Edward Sealander, 1010 Pike View, Lakewood, Colo., CA $78,859, est. $85,655, rock mix asph. processing, structures, 1.614 mi. SH 242 between San Luis and San Francisco S 0116 (1), road mix asph. processing 2.954 mi. S.H. No. 99 between San Luis and San Acacio, Costilla Co. Bids Dec. 30, awarded Dec. 31. CD 1/28.

† **Hugh McMillan,** Box 1227, El Paso, Tex., LB $293,645, est. $198,500, access trails, access roads (Up Range). Holloman Air Force Base, Serial No. Eng 29-005-53-52, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Dec. 30. CD 12/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Wells-Grinnan,** 7500 Sand Spring Rd., Tulsa, Okla., LB $6,334,000 plus $48,000 for utilities, construct, manage, finance Military HOUSING, at Rapid City Air Force Base, Inv. 091-80002-Air I, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Dec. 29. CD 12/22.

Oscar T. Chapman, Hutchins, Tex., LB $542,500, est. $500,000. 1 story, brick, tile HIGH SCHOOL, MINERAL WELLS, TEX. Mineral Wells Independent School Dist., c/o Supt., Mineral Wells, Tex. Bids Jan. 6. CD 12/17.

Nelson Constr. Co., McAllen, Tex., LB $336,975. 40-bed HOSPITAL unit, MISSION, TEX. City, Mission, Tex. Bids Jan. 2. CD 12/19.

E. J. Gerdes, 1704 N. Cameron St., Victoria, Tex. CA $381,300. Southside Elementary SCHOOL, VICTORIA, TEX. Victoria Independent School Dist., Victoria, Tex. Bids Jan. 3, awarded Jan. 7. Jordan C. Ault & Assoc., 604 E. Goodwin St., Victoria, Tex., archt.

▲ **Swinerton & Walberg Constr.,** 2040 South Navajo St., Denver, Colo., CA, $10,000,000, DISTRIBUTION CENTER, incl. 258,822 sq. ft. grocery warehouse, 28,627 sq. ft. milk products, 30,004 sq. ft. frozen

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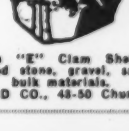
B. H. Mueller Co., 6625 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Philip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

Hayward Buckets



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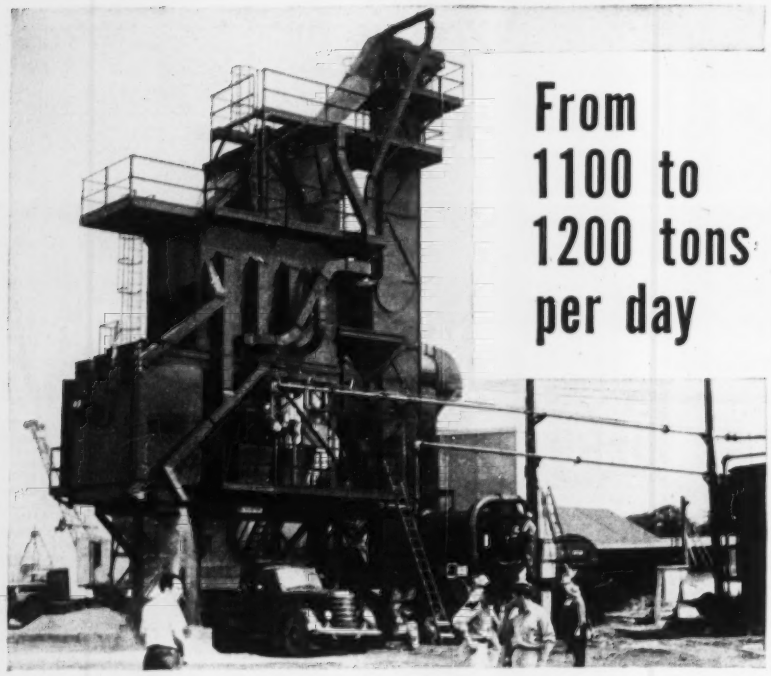

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foods, 20,210 sq. ft. bakery, 25,650 sq. ft. mixed loads, 104,980 sq. ft. produce, 113,575 sq. ft. meat warehouse, East Forty-sixth Ave. and Colorado Blvd., DENVER, COLO. Safeway Stores, Inc., 810 14 St., Denver, Colo. Charles E. Keyser & Ralph D. Peterson, 1701 Gilpin St., Denver, Colo., engrs. Awarded Dec. 19. CD 2/1/51.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Wash., Fort Lewis**—B.A. 2/5—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, outfall channel into Puget Sound with 338 lin. ft. 12 and 15 in. culvert, Inv. 53085. Extended date. CD 12/29.

† **Wash., Moses Lake**—WAREHOUSE—B.A. 2/17—U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, warehouse, Larson Air Force Base, Eng. 45-164-53-33. CD 10/8.

† **Arizona-Nevada** — SWITCHGEAR ASSEMBLY — B.A. 3/17—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, de. f.o.b. cars shipping point or f.o.b. cars Coolidge, Ariz., switchgear assembly with circuit breaker, etc. for Davis Dam Transmission System, Davis Dam Proj., Spec. DS 3868. L. M. McClellan, ch. engr.

BIDS ASKED—BUILDINGS

▲ **Calif., Long Beach**—COLLEGE—B.A. 2/18—State Div. Architecture, 217 W. First St., Los Angeles, Long Beach State College buildings $2,538,000. Plans deposit $25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **J. H. Trisdale, Inc.**, Box 779, Redding, Calif., LB. $1,138,810, est. $862,096 clearing Albeni Falls Dam reservoir area, Newport, Inv. 53-43, IDAHO. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Jan. 6. CD 12/29.

† **Valley Iron Works**, Yakima, Wash., CA. $52,800. gate frames for outlet and power tunnel at Palisades dam and power plant, Palisades Proj., Spec. DS 3835, IDAHO. Bureau Reclamation, Dpt. Interior Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Dec. 9, awarded Dec. 22. CD 11/12, under Unclassified.

† **Osberg Constr., Co.**, 1132 N. 128 St., Seattle, Wash., LB. $1,164,931, est. $1,024,172, earthwork, pipe lines structures for Area P-8 laterals, sublaterals and wasteways, Potholes East Canal Laterals, Columbia Basin Proj., Spec. DC 3845, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids 12/30. CD 11/24.

† **U. S. Eng.**, 180 N. Montgomery St., San Francisco, Calif., cancelled bids to have been opened Jan. 6 central pastry bakery, Parks Air Force Base, Inv. 53-145, PLEASANTON, CALIF. CD 12/15.

† **G. B. Gill Co.**, P.O. Box 1851, Long Beach, Calif., LB. $401,985, Sch. B, steam generation and distr., Norton Air Force Base, ENG 04-353-53-55, SAN BERNARDINO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Dec. 23. CD 12/1.

† **Heers Assoc**, 5971 Jurupa Ave., Riverside, Calif., LB. $202,387, readiness bldg., rocket storage bldg., etc. George Air Force Base, ENG 04-353-53-61, VICTORVILLE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Dec. 23. CD 12/8.

CANADA

BIDS ASKED—BUILDINGS

Que., Valcartier—HEADQUARTERS—B. A. 2/3—Defence Constr. Ltd., 1274 Guy St., Montreal, Headquarters Building No. 58, CADRE, Job. 2326, $300,000. Plans deposit $100. M. P. McAndrew, c/o owner, engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

ALBERTA—Province of Alberta, Edmonton,

Standard Gravel of Canada Ltd., 5340 1 St., Calgary, Alta., CA, $474,120, gravel base course, Nisku to Wetaskiwin;

Mannix Sullivan Paving Ltd., 332 7 Ave., Calgary, Alta., CA, $465,320, base course grav., Holden to Lindbrook, CD 12/1/43.

Bird Constr. Co., Ltd., 12525 127 Ave., Edmonton, Alta. CA $729,040 underground steam distr. sys., Cold Lake Air Base, COLD LAKE, ALTA. Defence constr. Ltd., Kensington Bldg., Winnipeg, Man. Bids Oct. 21. CD 10/3.

Burns & Dutton Concrete & Constr. Co., Ltd., 137 Ave. and 10A St., Edmonton, Alta. CA Est. $500,000. standard drill hall, recreation hall, general store at R.C.A.F. Station, COLD LAKE, ALTA. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg St., Man. Bids Jan. 22. CD 12/31.

BRITISH COLUMBIA—Province of B. C., Douglas Bldg., Victoria,

General Constr. Co., Ltd., Granville Island, Vancouver, B. C., LB, $228,680, reconstr. 4.34 mi. Swan Lake-Vernon Section of Okanagan Hy. Bids Jan. 6. CD 12/31.

Fraser Constr. Co., Ltd., 850 Somerset Bldg., Winnipeg, Man., CA, $350,000, standard OFFICERS QUARTERS, GIMLI, MAN. Govt. of Canada, Dpt. National Defence AIR Ottawa, Ont. Bids Dec. 4. CD 11/21.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs. Toronto, Law Constr. Ltd., 225 Sterling Rd., Toronto, Ont., CA, $530,000, 5.8 mi. new road, Woodstock to Ingersoll area, Contract 22-99, Woodstock;

F. W. McLachlan Constr. Co., Ltd., 195 Fairbank Ave., Toronto, Ont., CA, $725,000, hy. grading, structures 5.12 mi. south of Noar to CNR Rlwy. crossing, in Huntsville Area. Awarded Jan. 5. CD 4/27/44.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **W. C. Wells Constr. Co., Ltd.**, 10571 115 St., Edmonton, Alta, LB Est. $1,000,000. BANK addn., Jasper Ave. and 100 St., EDMONTON, ALTA. Imperial Bank of Canada, 51 King St. W. Toronto, Ont. CD 1/9.

Thomas Constr. Co., Ltd., 45 Dickson St., Galt, Ont. CA Est. $260,000. FACTORY and OFFICE addn., GALT, ONT. B. F. Sturtevent Co. of Canada Ltd., Middleton St., Galt, Ont. Awarded Jan. 2

Eastern Constr. Co., Ltd., Box 161, Walkerville, Ont. CA, $500,000, 3 story, 186x336 ft., concrete block rack WAREHOUSE, WINDSOR, ONT. Hiram Walker & Sons Ltd., 2067 Sandwich St. E., Windsor, Ont. Smith, Hinchman & Grylls, Inc., Marquette Bldg., Detroit, Mich., U. S. A., archt.

J. Rene Gauthier, Ltd., 5814 12 Ave., Rosemont, Que. Own Forces, $90,000. 1 story, steel, brick GARAGE, concrete fdn., MONTREAL, QUE. R. Chalifoux, 6275 Papineau Ave., Montreal, Que., archt.

ALASKA

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲† **Boen-Koon Constr. Co. & Egge-Cummins Constr. Co.**, 3647 Stone Way, Seattle 3, Wash., CA. $1,453,005, est. $1,453,154, automotive maintenance facilities, Inv. 53-29, Ladd Air Force Base. ALASKA. U. S. Eng., Anchorage, Alaska. Bids Dec. 30. CD 1/7, under LB.

PUERTO RICO

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

Zaqueira & Pinero, c/o owner, CA $698,600; est $3,000,000. terminal bldg. at Isla Verde International Airport near San Juan, PUERTO RICO. Puerto Rico Transportation Auth., San Juan, Puerto Rico. Knappen-Tippetts-Abbett-McCarthy, 62 W. 47 St., New York, N. Y., engrs. Bids Nov. 1, awarded Dec. 31. CD 8/22.

Proposed Projects

WATER SUPPLY

Calif., Los Banos—Miller & Lux, Inc., 830 Sixth St., sinking 70 wells, development of supplemental water supply, $500,000. T. Mott, c/o owner, engr.

▲ **Conn., Stamford and Greenwich**—Greenwich Water Co., 12 Havemeyer Pl., Greenwich, filter plant and reservoir, $1,000,000. American Water Works Service, Inc., 124 S. Broad St., Phila., Pa., consult. engr.

Tex., Clute—City (c) water supply, $60,000. (d) water storage, steel elevated, $75,000. (e) water main, sys. rehabilitation, $85,000. Garrett Eng. Co., 5008 Almeda Rd., Houston, Zone 4, consult. engr. CD 10/22.

Tex., Lockhart—City, (1) 7½ mi. 14 in. c.i. water main from McMahan to Lockhart, $245,000, (2) tripling capacity water treatment plant, $90,000, (3) 4 deep water supply wells, $110,000, (4) ground or elevated water storage, $50,000. Julian Montgomery, 602 West Ave., Austin, consult. engr.

SEWERS, WASTE DISPOSAL

▲ **Ga., East Point**—City, sanitary sewers for Ben Hill area, $1,000,000.

Ga., Macon—City, City Hall, sewage disposal plant, $300,000.

▲ **Mich., Detroit**—City, Carl D. Warner, comr. Dpt. P. Wks., Guardian Bldg., Kercheval-Algonquin storm relief sewer, $4,000,000; first sect. of Seven Mile-Conant-Mt. Elliott relief sewer, $1,000,000, George R. Thompson, city engr. CD 9/6/51.

BRIDGES

▲ **Ill., Chicago**—City, City Hall, bridge over Chicago Ship Channel, Kedzie Ave. $1,400,000.

▲ **KENTUCKY and INDIANA**—Louisville Area Bridge Comn., Mayor Farnsley, City Hall, Louisville, Ky., bridge or bridges across Ohio River, $2,000,000, Modjeski & Masters, State Street Bldg., Harrisburg, Pa., consult. engrs. CD 4/10.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Mansfield—elimination grade crossing N. Y., N. H. & H. R. R. $3,000,000, Praeger-Maguire Assoc., 142 Richmond St., Providence, R. I., consult. engrs.

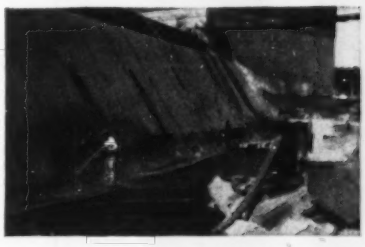
O., Cleveland—Cuyahoga Co., Court House Zone 14, bridge and highway approaches on Miles Rd. at Chagrin River, Bentleyville Village. $560,000. Albert S. Porter, Standard Bldg., engr.

▲ **Que., Montreal**—City, City Hall, Montreal, Canadian Pacific Ry., R. A. Emerson, ch. engr., Montreal, Zone 3, and Canadian National Rys. K. Huffman, ch. engr., Toronto, Ont., viaduct under Metropolitan Boulevard near Valois near Strathmore Station. $1,250,000.

STREETS AND ROADS

Conn., East Hartford—Town, P. Wks. Dpt., Town Hall, Highway (North-South) to run North from Forbes St.

EXPERT "GUNITE" REPAIRS SAVE DAM



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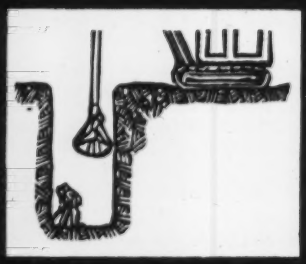

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Mich., Detroit—City, Carl D. Warner, comr. Dpt. W Wks., Guardian Bldg., b. conc. surf. residential street $500,000. George R. Thompson, city engr. C 12/17/51.

NORTH CAROLINA—State Hy. & P. Wks. Comr., Raleigh Wake Co.—highway from U. S. 64 northwesterly t U.S. 1. $250,000.

▲ OKLAHOMA—Oklahoma Toll Road Auth., Lawton toll road from Lawton to Oklahoma City. $25,000,000 Wyatt B. Hendricks, Lawton, consult. engr.

▲ Va., Richmond—City, City Hall,
Broad St.; widen from 1914 city limits to 1942 cit limits, $500,000.
Broad St., widen from Sheppard St. to 1914 city limit $410,000.
Hermitage Rd., imprv. from Westbrook to Bellevue Aves $250,000.
North Boulevard, imprv. from Broad to Norfolk Sts $110,000.
Petersburg Pike, widen from 1942 city limits northward to 1914 city limits, $2,100,000.
Staples Mill Rd., widen from Broad St. to 1942 cit limits, $75,000.
Westwood Ave. and Hermitage Rd. imprv. traffic circle $120,000. CD 10/7/43.

EARTHWORK, WATERWAYS

▲ † Kansas—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., Toronto Dam and Reservoir on Verdigris River, $15,550,000. CD 2/11/44, under Kans Toronto.

Mont., Havre—City, flood control constr., $475,000.

AIRPORTS

† Del., New Castle—NAVIGATION AIDS, etc.—U. S Eng., 121 N. Broad St., Phila., Pa., navigation aids $500,000, Sears & Kopf, 13 E. 37 St., New York N. Y., consult. engrs.; radar beacon, $500,000, General Industries, Inc., 309 S. Broad St., Phila., Pa consult. engr. and archt., above work at New Castl Air Force Base.

▲ † Ind., Peru—AIR STATION—Ninth Naval District Naval Training Center, Great Lakes, Ill., plans b Naess & Murphy, 80 E. Jackson Blvd., Chicago, Ill reconstr., enlarging Bunker Hill Naval Air Station 12 mi. north of here, incl. widening, extending, reinforcing runways, taxi and parking areas for large planes, hangar, mess hall, barracks, etc. for air force $15,000,000. Clyde E. Williams, South Bend, civ engr. Beiswenger & Hoch, Inc., 1661 W. Market St. Akron, O., mech. engr.

† Me., Limestone—R.A.T.C. CENTER—Purchasing & Contracting Office, Bldg. T-6541, R.A.T.C. Center Limestone Air Force Base, IFB 17-600-53-13. CD 9/19/51.

† Mass., Chicopee Falls—TECHNICAL LABORATORY SECURITY STORAGE—U. S. Eng., 857 Commonwealth Ave., Boston, plans by Samuel Glaser Assoc., 10 Newbury St., Boston, technical laboratory security storage, Westover Air Force Base, $500,000-$1,000,000. CD 1/14/52.

† Okla., Ardmore—HEADQUARTERS—U. S. Eng., Box 62, Tulsa, construct two 25,000 sq. ft. wing headquarters and base group headquarters bldgs., Ardmore Airfield, Inv. No. Eng 34-066-53-84. $275,000. CD 1/24/52.

† Ore., Portland—AIRPORT—U. S. Eng., 4735 E Marginal Way., Seattle 4, Wash.; hydrant refueling $300,000; washrack, $75,000; utilities, $50,000 GCA, $25,000, Portland International Airport.

† Tex., Randolph Field—COMMUNICATIONS BLDG.—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Cerf Ross Associates, archts.-engrs., 111 Auditorium Circle, San Antonio, communications bldg. and utilities. CD 5/2/51.

▲† Wash., Moses Lake—HANGAR, etc.—U. S. Eng. City-County Airport, Walla Walla, base maintenance hangar, $2,000,000; apron extension $2,000,000; warehousing, $500,000; heating plant, $500,000 washrack $100,000; warm-up pad, $100,000 heating distribution, $100,000, Larson Air Force Base. CD 12/28/49

Alta., Calgary—AIR TERMINAL BLDG.—Municipality City Hall, air terminal bldg. at municipal airport $500,000. J. I. Strong, City Hall, city engr. CD 6/21/46.

AMERICANS ABROAD

▲ Australia, Queensland—Nevin Pacific Co. & Raymond Concrete Pile Co., 140 Cedar St., New York 6, N. Y., U. S. A., modernization of coal mining facilities at Blair Athol and 150 mi. standard gauge railroad to Nevinport. $60,000,000.

LATIN AMERICA

Brazil, San Paulo—Friedrich Krupp Industries of Germany, Sao Paulo, plans plant to mfg. locomotives. 50,000,000 Cruzeiro.

Cuba—National Agricultural & Industrial Development Bank of Cuba, Havana, has signed an agreement with Knappen-Tippetts-Abbett-McCarthy, 62 W. 47 St., New York City, N. Y., consult engrs., to make report on possibility of developing hydro-electric facilities on Hanabanilla Negro and Guanayara Rivers in Cienfuegos, Las Villas Province.

Mexico, Aguascalientes—City Govt., Palacio Municipal, Aguascalientes, plans WW, sewerage. $500,000. Ing. Jose Aceves Diaz, c/o owner, engr.

▲ **Mexico, Mexico City**—Fernado Garcia Bringas, M. Ocampo, 446, Mexico City, plans 5,000 seat cinema. $1,000,000.

PUBLIC BUILDINGS

▲ **Ala., Birmingham**—HOSPITAL—Jefferson Co., Court House, plans by Geo. P. Turner, American Life Bldg., charity hospital, $2,000,000.

▲ **Ark., Fayetteville**—ANIMAL SCIENCE—University of Arkansas, Fayetteville, animal science bldg. $1,000,000.

▲ **Calif., El Monte**—SCHOOLS—El Monte Union High School Dist., 712 S. Tyler St., $5,250,000 bond election Feb. 17, high school in North El Monte, $3,000,000; Rosemead High School addn., $500,000, CD 3/2/50; high school in Bassett, $1,700,000.

▲ **Calif., Los Angeles**—SCHOOLS—Los Angeles Bd. Educ., 1425 S. San Pedro St., plans by Wm. Mellema & Leon Teudas, 1663 Beverly Blvd., 1 story, frame, stucco Grandview Blvd. School, $745,000; plans by Anthony Thormin, 672 S. Lafayette Park Pl., Montague St. School, Van Nuys, $400,000; plans by Arthur & Ross Hutchison, 816 W. 5 St., Audubon Junior High School, $500,000; plans by Allison & Rible, 625 S. Westmoreland Ave., Reseda High School, Reseda, $4,000,000. CD 6/13.

Calif., San Francisco—SCHOOL—Dpt. P. Wks., City Hall, plans by Stone & Mulloy and S. P. Marraccini, 619 California St., Mark Twain School, in Sunset Community Center $700,000. CD 11/17/48.

▲ **Conn., New Haven**—PARKING GARAGE—New Haven Parking Auth., City Hall, plans by Harold H. Davis, 29 Whitney Ave., 4 story, 176x200 ft., steel, rein.-con. parking garage, College and Crown Sts. $1,000,000. CD 12/24.

▲ **Mass., Winchester**—SCHOOL—Town, W. Spears, chn. Bldg. Comn., c/o supt. Schools, 84 Washington St., plans by Louis W. Ross, 1313 State St., Boston, Junior High School addn., alterations, South West Side, Main St. $1,000,000.

▲ **Mich., Jackson**—HOSPITAL—City, C. H. Elliott, mgr., 75-bed hospital addn., surgical and treatment facilities, $1,800,000. CD 12/4.

Mich., Royal Oak—SCHOOL—City, Madison School Dist., bond election in January, 2 story, bsmnt., brick, steel elementary school, Madison Dist. $500,000.

▲ **Mich., Warren**—SCHOOL—Wayne Twp. School Dist. No. 2, plans by Brender & Van Reyendam, 410 Hammond Bldg., Detroit, 2 story, bsmnt., brick, steel, concrete high school incl. gymnasium, offices, service facilities. $1,000,000. CD 7/25/52.

Minn., Elmore—SCHOOL—Bd. Educ., K. M. Johnson, clk., voted $597,000 bonds Dec. 15, school, Haarstick, Lundgren & Assoc., W. 1385 First National Bank Bldg., St. Paul, archts. CD 10/29.

▲ **Mo., Springfield**—SCHOOL—Bd. Educ., 940 N. Jefferson St., $1,070,000 bond election Jan. 20, schools, school addns., sites.

▲ **Mont., Helena**—SCHOOL—Helena High School Dist., plans by Cushing & Terrell, 212½ N. Broadway, Billings, high school, $1,500,000. CD 11/7.

▲ **N. J., Camden**—SCHOOL—Camden Bd. Educ., Court House Sq., plans by Edwards & Green, consult engrs. and archts., 17 S. 5 St., Junior High School, $1,500,000. CD 1/2/51.

▲ **N. J., Trenton**—ADMINISTRATION—N. J. Bd. Educ., 175 W. State St., Trenton, plans by Lawrence C. Licht, 19 Knickerbocker Rd., Englewood, administration bldg., Hillwood Lakes State Teachers College, $1,500,000. Saul Shaw & Co., 24 Commerce St., Newark, consult. engrs. CD 12/23.

N. J., Trenton—HOSPITAL—N. J. Dpt. Institutions & Agencies, State House, plans by Kramer & Hirsch, 115 W. State St., State Hospital fireproofing and reconstruction, $500,000. CD 5/15/50.

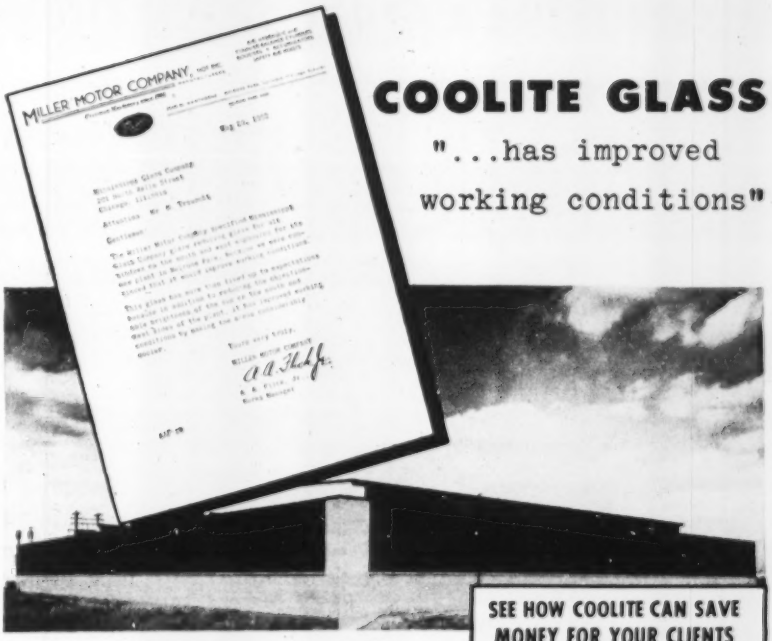
▲ **N. C., Raleigh**—SCHOOLS—Bd. Comrs., Wake Co. Court House, bond election Feb. 24, city schools, $2,750,000 county schools. $2,750,000.

▲ **O., Akron**—PHYSICAL EDUCATION—University of Akron, 302 Buchtel St., plans by Akron Allied Architects, c/o M. P. Lauer, 225 W. Exchange St., 4 story, 156x214 ft. gray brick physical education bldg., swimming pool, exercise rooms, classrooms, storage, offices, gymnasium with 3,100 permanent seats and 1,000 portable bleacher seats, Brown and Carroll Sts. $1,150,000. CD 5/19.

O., Bowling Green—SCHOOLS—Bd. Educ., Bowling Green, $970,000 bond election Feb. 10, 2 new grade schools. CD 10/30.

O., Brooklyn—SCHOOL—Bd. Educ., Ernest H. Fretter, clk.-treas., combined grade-junior high school on Roadoan School property, facing Ridge Rd. $700,000-$800,000.

▲ **O., Columbus**—HOUSING—Columbus Metropolitan Housing Auth., 425 W. Rich St., plans by Sims, Cornelius & Schooley, 2901 N. High St., 524 unit housing, in 88 bldgs. on East Side at Woodward, Woodland and Brentnell Ave. tract. $6,500,000. CD 11/19.



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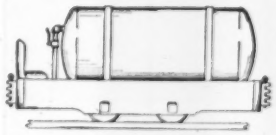

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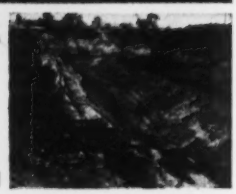

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Ore., Roseburg—HIGH SCHOOL—Dillard-Lookingglass-Ten-mile School Dist., Roseburg, plans by Dougan & Heims, Portland Trust Bldg., Portland, high school, $568,000.

Pa., Ardmore—HIGH SCHOOL—Lower Merion School Dist., Ardmore, Junior High School addn. $700,000.

Pa., Bristol—SCHOOL—Bristol Twp. School Dist., Bristol, elementary school, Laurel Bend and Delhaas site. $750,000.

Pa., Clifton Heights—SCHOOL—Upper Darby Twp. School Bd., Clifton Heights, plans by Barney & Banwell, 1400 S. Penn Square, Phila., Westbrook Park Grade School. $750,000. CD 10/23.

Pa., Fallsington—SCHOOL—Falls Twp. Bd. Educ., Fallsington, sketches by A. E. Micklewright, 72 Ewing St., Trenton, N. J. Penn Valley School Bldg., Levittown, $800,000.

▲ Pa., Larchmont—SCHOOL—Marple—Newton Joint High School Bd., Larchmont, Joint Senior High School $750,000; plans by Joseph J. Wigmore, 117 S. 17 St., Phila., Joint Junior and Senior High School addn., $300,000. CD 3/21/46.

▲ Pa., Phila.—HIGH SCHOOL—Bd. Educ., 21 and Winter Sts., plans by The Ballinger Co., 121 N. Broad St., Senior High School, Bleigh and Algon Sts., etc. $6,000,000. CD 11/28.

▲ Pa., Rosemont—HIGH SCHOOL—Lower Merion School Dist., Ardmore, Junior High School. $1,000,000.

Pa., Willow Grove—SCHOOL—Upper Moreland Twp. School Dist., Willow Grove, plans by Davis, Dunlap & Carver, 1717 Sansom St., Phila., elementary school. $500,000. CD 11/13.

▲ R. I., Bristol—VETERANS HOME—Rhode Island Veterans Home, c/o Creer, Kent, Mather, Cruise & Aldrich, archts., 423 Industrial Trust Bldg., Providence, remodel and addn. to Veterans Home. $1,500,000. CD 12/23.

▲ Tex., Victoria—HOSPITAL—Victoria Co., Victoria, county hospital. $2,000,000.

▲† Wash., Auburn—DEPOT—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, administration bldg. $800,000; 200x300 ft. steel, masonry flammables warehouse, $600,000; motor and heavy equipment shop $300,000, at Auburn General Depot.

▲ Wis., Sturgeon Bay—HOSPITAL—Door County Memorial Hospital Assn., Sturgeon Bay, plans by G. J. Feldhausen, Assocs., Columbus Bldg., Green Bay, hospital, $1,200,000.

▲ Man., Winnipeg—HOSPITAL—Winnipeg General Hospital, Bannatyne Ave., plans by Northwood & Chivers, 406 Nanton Bldg., 7 story wing, addn. 4 story, 2 story stores wing, kitchen and dining rooms expansion of nurses residence $5,000,000. CD 12/31/45.

▲ Ont., Hamilton—SCHOOL—Ontario Dpt. Educ., Dr. John G. Althouse, dir., Queens Park, Toronto, Strathcona Avenue Normal School, $1,500,000.

COMMERCIAL BUILDINGS

▲ Calif., Port Hueneme—DWELLINGS—McDonald Bros. 6014 W. Acams Blvd., Los Angeles, plans by Charles F. Nagel, 553 S. Western Ave., Los Angeles, 185 frame, stucco dwellings, $1,250,000.

▲ Calif., San Francisco—WORLD TRADE CENTER—World Trade Center Authority, Bd. State Harbor Comrs., Ferry Bldg., plans by Wm. Gladstone Merchant, 57 Post St., Ferry Bldg. alterations for world trade center $2,000,000. CD 1/4/51.

Mich., Albion—HOUSING—Albion Development Co., A. A. Magnotta, Albion, 80 single homes, Thorp housing subdivision, $800,000.

Mo., Springfield—HOSPITAL, etc.—Burge Hospital, 440 S. Market St., plans by Esterly & Amspacher, McDaniel Bldg., 3 story hospital wing for crippled children sect., 3 story student-nurses home. $700,000.

N. J., Bordentown — SHOPPING CENTER — Bordentown Shopping Tower Center, c/o Edwards & Green, archts., 17 S. 5 St., Camden, shopping center, $900,000.

▲ N. J., Bordentown—RESIDENTIAL DEVELOPMENT—Military Park Village, Inc., c/o Edwards & Green, archts., 17 S. 5 St., Camden residential development, $1,000,000.

▲ N. Y., Flushing—APARTMENT—Algiers Realty, Inc., c/o M. F. Kirchman, arch., 230 W. 13 St., New York, Zone 11, 6 story apartment, Kissena Blvd. and 45 Ave. $2,000,000.

▲ N. Y., New York—HOUSING—Locals 807 and 707 of International Brotherhood of Teamsters, 325 Spring St., Zone 13, plans by Pomerance & Breines, 33 W. 46 St., Zone 19, housing for 2,000 families to be called Riverview Village, thirteen 11 story bldgs. on 40-acres. On tract bounded by O'Brien Ave., White Plains Rd., East River and Cornell Ave. $20,000,000.

N. Y., New York—COLLEGE—Trinity Parish, 74 Trinity Pl., Zone 6, College of Pastoral Work. $500,000.

N. C., Charlotte—OFFICE—Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga., central office addn. $500,000.

N. C., Gastonia—CHURCH—Main Street Methodist Church, Gastonia, church. $500,000.

▲ O., Columbus—OFFICE—Ohio Bell Telephone Co., 42 E. Gay St., 3 and 6 story office bldg., 111 N. Fourth St. $3,500,000 CD 12/18.

▲ O. Maumee—SHOPPING CENTER—Cooley Ellis, 1116 Madison St., Toledo, plans by Stephen M. Jokel, 905 Jefferson St., Toledo, 1 story shopping center, Detroit Ave., extending from Anthony Wayne Trail to Lucas County Garage $3,000,000.

▲ **Okla., Tulsa**—HOSPITAL—St. John's Hospital, 1923 S. Utica St., plans by L. B. Senter, Philtower Bldg., 6 story hospital wing. $2,000,000.

▲ **Pa., Abington**—SHOPPING CENTER—York Road Community Shopping Center, Inc., c/o Lilley & Co., 1500 W. Walnut St., Phila., shopping center, Old York Rd. $10,000,000.

▲ **Pa., Phila.**—APARTMENT—1901-1921 Co-operative, Inc., c/o Peoples Bond & Mortgage Co., 1426 Walnut St., Phila., Pa., plans by George S. Idell, 117 S. 17 St., apartment, 18 to 19 Sts., Penna Blvd. and Cuthbert St. $8,000,000.

▲ **Tex., Houston**—APARTMENT—W. M. Dickey & Assoc., 2719 Westheimer St., plans by MacKie & Kamrath, 3713 Ferndale St., and John Fagothey & Assoc., 3713 Ferndale St., 14-story, bsmnt. apartment. $1,755,000. Walter P. Moore, 2 Pinedale St., consult. engr. CD 12/31.

Tex., Houston — EDUCATIONAL — First Presbyterian Church Congregation, 301 S. Center St., Dallas, plans by Bennett & Crittenden, 2812 Fairmount St., Dallas, 4 story educational. $500,000.

▲ **Tex., Houston**—DWELLINGS—C. C. Rouse Builder, 1409 Lincoln St., 10 masonry type dwellings, Sec. 1, $300,000; 8 masonry type dwellings $300,000; 20 two story, masonry dwellings, $600,000; 12 ranch type masonry dwellings, $350,000; 15 one and 2 story masonry dwellings, $375,000, adjacent to Grady School.

Alta., Edmonton—OFFICE—Alberta Investment Ltd., c/o Dewar, Stevenson & Stanley, archts., 618 Northern Hardware Bldg., 5 story, steel, brick office, Jasper Ave. and 108 St. $500,000.

▲ **Alta, Edmonton**—BANK—Imperial Bank of Canada, Jasper and 100 Sts., plans by Rule, Wynn & Rule, 11422 Jasper Ave., 6 story, rein.-con. bank addn., Jasper Ave. and 100 St. $1,000,000.

▲ **Alta., Lethbridge**—HOUSING—Glencoe Real Estate & Insurance Co., 1252 Third Ave. S., housing development on 97-acre site, 35 St. between 10 and 12 Ave. $4,000,000.

▲ **Man., Winnipeg**—HOUSING—Modern Homes Ltd., Smithfield-McGregor St., plans by S. C. Smiley, 1645 Hennepin Ave., Minneapolis, Minn., U. S. A., housing, 1500 homes, West Kildonan, street work and utilities $25,000,000. (5 year program). CD 6/28/46.

▲ **Que., Montreal**—CLASSICAL COLLEGE—Rev. Peres Endistes au Canada, 293 Blvd. des Prairies, plans by A. Martineau, 332 Craig St., classical college on Blvd. Rosemont, between 13 and 15 Aves. $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Stockton**—WAREHOUSE—Maco Warehouse Co., S. Firestone Ave., storage facilities. $1,125,000.

▲ **Del., Wilmington**—DRUG DISTRIBUTION PLANT—Smith, Kline & French, Inc., 1530 Spring Garden St., Phila., Pa., drug distribution plant. $1,000,000.

▲ **Ga., Brunswick**—PLANT—Hercules Powder Co., Brunswick, plant addn. $1,000,000.

▲ **Ind., Clermont**—STORAGE PLANT—Sinclair Refining Co., Underwriter Bldg., Indianapolis, bulk storage plant on 200-acre tract south of here. $1,500,000.

▲ **Ind., Connersville**—PLANT—Philco Corp., 445 E. Tioga St., Phila., Pa., plant mfg. home freezers and refrigerators, 200-acre site north of here. $4,000,000.

▲ **Ind., New Albany**—PLANT—Davison Chemical Co., W. N. Watmough, Jr., pres., Davison Chemical Bldg., Baltimore, Md., fertilizer mfg. plant on 20 acre site, $1,000,000.

▲ **Kan., Arkansas City**—REFINERY—Anderson-Pritchard Oil Corp., Arkansas City, refinery expansion, $2,000,000.

▲ **La., Dubach**—PLANT—Southwest Gas Producing Co., Dubach, petroleum-chemical plant, $4,000,000, Universal Oil Products Co., 310 S. Michigan St., Chicago, Ill., consult. engr.

▲ **Mo., St. Louis**—PARKING GARAGE—Bi-State Development Agency, Milton M. Kinsey, ch. engr., Syndicate Trust Bldg., 917 Olive St., St. Louis, Zone 1, plans by Milton M. Kinsey & C. Roy Bowen & Assoc., 511 Locust St., Zone 1, parking garage and pedestrian underpass on river front between Washington Ave. and Market St. west of Second St. underpass along Olive St. to 8 St. or farther, $9,500,000.

▲ **N. C., Greensboro**—PLANT—P. Lorillard Co., 119 W. 40 St., New York, N. Y., plans by Lockwood Greene Engineers, Inc., 10 Rockefeller Plaza, New York, N. Y., cigarette plant. Approx. $1,000,000. CD 12/30.

▲ **Tex., Dallas**—REFRIGERATION PLANT—Alford Refrigerated warehouses, 318 Cadiz St., refrigeration plan addns. $1,450,000. conversion existing 1,225,000 cu. ft. dry storage room into a cooler, $850,000; expansion of electrical production facilities in refrigerated area, incl. generating unit, $700,000.

▲ **Tex., Houston**—PRODUCE—Houston Produce Terminal, Inc., 101 Travis St., plans by Wyatt C. Hedrick, archt. and engr., 5201 Fannin St., Unit 1, main produce bldgs., 5 concrete masonry type and 4 bldgs. to service produce merchants, $2,750,000; rein.-con. paving in terminal area, $150,000; area earthwork for grounds imprv. and bldgs. fdns., $90,000; railway spur and produce terminal tracks, $75,000; sewers, drainage, $75,000; water sys. $40,000. CD 9/22/49.

▲ **Alta., Edmonton**—PLANT—Texaco Exploration Co., Northern Hardward Bldg., wet gas process plant in Pigeon Lake area, near here. $2,500,000.

▲ **Ont., Toronto**—PARKING GARAGE—Civic Garage Co. Ltd., New York, c/o Garry J. Carter of Canada Ltd., 59 Avenue Rd., parking garage under civic square at Bay and Queen Sts., for 5,000 cars $5,000,000.

UNCLASSIFIED

Calif., Los Angeles—MEMORIAL—Los Angeles Co. Hall of Records, plans by Kazuni, Adachi & Dike Nagano, 6351½ S. La Brea St., Fort Moore Hill Memorial, retaining wall, fountain, $333,764.

▲ **Del., Talleyville**—HARNESS RACING TRACK, etc.—Brandywine Raceways Assoc., Inc., N. American Bldg., Wilmington, plans by Aaron Colish, 117 S. 17 St., Phila., Pa., harness racing track and grandstand, $1,500,000 CD 11/25.

Ga., Atlanta—PARK IMPRVS.—City, City Hall, plans by Aeck Assocs., 140 Peachtree St. N.E., imprvs. at Atlanta Memorial Park $200,000. CD 6/21/46.

Ind., Hammond—SWIMMING POOLS—City, City Hall, swimming pools in 3 city parks. $600,000. Leo Besozzi, 5217 Hohman St., Hammond, consult. engr. CD 7/20/50.

▲ **Mich., Detroit**—TELEVISION STATION—Detroit News WWJ-TV, Warren S. Booth, pres., 615 W. Lafayette St., television station addns., incl. 1,038 ft. tower, Eight Mile Rd. and Meyers St. $1,000,000.

▲ **Mississippi**—RURAL DISTRIBUTION LINES—Tallahatchie Valley Electric Power Assoc., Batesville, 198 mi. rural distr. lines, sys. imprvs., Panola Co. $1,300,000. CD 1/14/49.

▲ **Missouri and Iowa**—TELEPHONE LINES—Grand River Mutual Telephone Corp., Princeton, Mo., expansion of telephone lines in Dunlap, Tindall, Spickard, Chula, Bethany, Princeton, Mercer, Gilman City, Eagleville, Brooklyn, Martinsville, Laredo, Galt, Ridgeway, Jamesport, Cainsville, Ravanna, Brimson, Blythedale and Mt. Moriah, Mo.; Lineville, Leon, Lamoni, Garden Grove, Davis City, Clio, Allerton, Pleasanton and Welton possibly, and Osgood, Ia. $5,000,000. Lowell B. Moore, Trenton, Mo., co-ordinating engr.

Montana—RURAL DISTRIBUTION LINES—Northern Electric Co-operative, Opheim, 83 mi. rural distr. lines, 16 mi. of 34.5 KV transmission line, sys. imprvs., Valley Co. $270,000.

▲ **New Mexico**—RURAL DISTRIBUTION LINES—Lea County Electric Co-operative, Lovington, 480 mi. rural distr. lines, 4 addnl. 2,500 kw diesel units to generating plant; 37 mi. 69 kv transmission line and sys. imprvs. Lea Co. $4,145,000. CD 8/20.

Ohio—RURAL DISTRIBUTION LINES—Buckeye Rural Electric Co-operative, Gallipolis, 170 mi. rural distr. lines, 4 mi. 69 kv transmission line and sys. imprvs., Gallia Co. $825,000.

▲ **O., Akron**—TELEVISION STATION—Allen T. Simmons, c/o Station WADC, Mill and Main Sts., television station on 30-acre site near Evans Ave. Disposal Plant, using Channel 61. $1,000,000.

O., Toledo—SWIMMING POOL—Bd. Educ., Administration Bldg., 121 Southard Ave., swimming pool in DeVilbiss High School area, across Westland Ave. from Page Stadium $500,000.

South Dakota—RURAL DISTRIBUTION LINES—Codington-Clark Electric Co-operative, Watertown, 155 mi. rural distr. lines and sys. imprvs., Clark Co. $308,000. CD 10/22/48.

S. D., Madison—ELECTRIC SYSTEM—City, voted $370,000 bonds Dec. 9, electric sys. imprvs. Buell & Winter, 508 Insurance Exchange Bldg., Sioux City, Ia., consult. engrs. CD 10/20.

Tennessee—RURAL DISTRIBUTION LINES—Meriwether Lewis Electric Co-operative, Centerville, 72 mi. rural distr. lines and sys. imprvs., Hickman Co. $990,000. CD 6/4/48.

Tenn., Memphis—PARK—Memphis Park Comn., City Hall, park imprvs. $750,000.

▲ **Texas**—OIL LINE, etc.—Pan American Pipe Line Co., M. Esperson Bldg., Houston, 28 mi. 26 in. welded joint crude oil line from near Houston to owners refinery at Texas City, Harris Co. $2,000,000; constr. crude and products storage facilities, Texas City, $400,000; 375,000 bbl. steel tank farm and some housing storage (products), at Snyder near Concho Station, $300,000; pump station at Bailey Station, near Snyder, $275,000.

Texas—RURAL DISTRIBUTION LINES—Southwest Texas Electric Co-operative, Eldorado, 58 mi. 7.2 kv tie line and sys. imprvs., Schleicher Co. $350,000. CD 6/9/50.

Tex., Houston—TRANSMISSION TOWER—KPRC—TV Station, c/o Houston Post, 2318 Polk St., 630-ft. transmission steel tower. $225,000.

Washington—RURAL DISTRIBUTION LINES—Public Utility Dist. No. 1 of Ferry County, Republic, 116 mi. rural distr. lines and sys. imprvs., Ferry Co. $445,000.

Wisconsin—RURAL DISTRIBUTION LINES—Barron County Electric Co-operative, Barron, 94 mi. rural distr. line and sys. imprvs., Barron Co. $600,000.

▲ **B. C., New Westminster**—DOCK—New Westminster Harbor Bd., K. K. Reid, chn., dock, $1,250,000 W. G. Swan & Assocs., 718 Granville St., Vancouver, consult. engrs. CD 5/16.

Ont., Hamilton—RINKS, etc.—Municipality, City Hall, 4 artificial rinks and 3 swimming pools. $710,000. N. Fodor, 76 St. Mary St., Toronto, consult. engr. W. McFaul, City Hall, city engr. CD 12/10.

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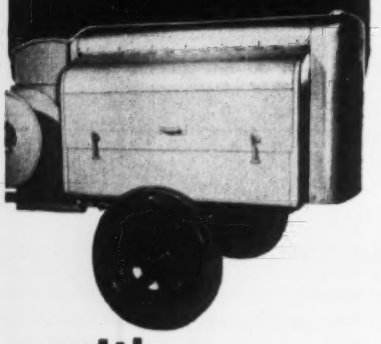


smith MODEL 105-P

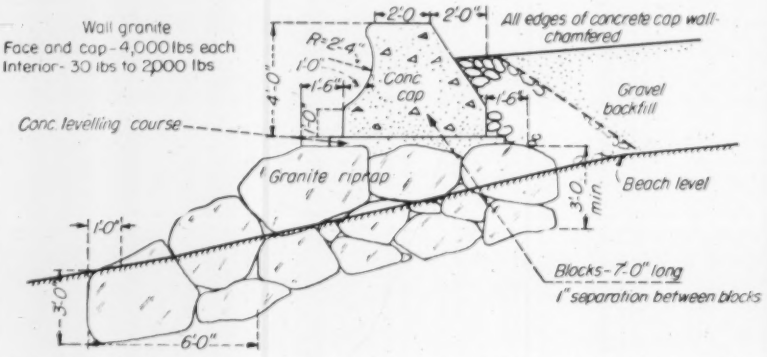
Lower first cost!
Lower upkeep!

In high-cost times, look to the Smith for compressor savings! Delivers 105 cu. ft. per minute—combines heavy duty with light weight; easily portable. Powered with the Chrysler Ind. 15 Industrial engine — 6 cyl., 4" bore, 5" stroke, 377 cu. in., 3" crankshaft, 7 main bearings, sodium cooled valves and Stellite valve seats for heavy duty, long life. Compressor valves—stainless steel disc type with Manganese Bronze seats. Improved type pilot valve and simplified control . . . *Write for literature and prices.*

ALSO the new SMITH 70-P AIR COMPRESSOR

Gordon Smith & Co.
Incorporated
430 College St.
BOWLING GREEN, KY.

UNIT PRICES



PERMEABLE SEAWALL—A typical cross-section of the type of seawall being used in Boston harbor construction because of its low cost, attractive appearance and flexibility.

Permeable seawall, Mass.

A permeable seawall is to be constructed in Quincy, Massachusetts, by Port of Boston Authority, George L. Way, chief engineer, as a part of the shore-protection program for Boston harbor.

Low cost is achieved by the use of rip-rap. A contrasting concrete cap gives a pleasant two-tone effect, and flexibility is achieved by individual components that will not be affected by differential settlement and horizontal movement.

About 4 miles of this seawall have been completed in Boston Harbor since 1947, and a commitment for 8,000 ft next year has been made.

The $54,106 contract, awarded to Bradford Weston, Inc., Hingham, Mass., lowest of three bidders, provides for 1,530 feet of this permeable type of seawall and six rip-rap groins, each 100 feet long.

Skilled workers are receiving $2.8875 per hr; semi-skilled, $2.46 per hr; and laborers, $1.815 per hr.

Bidders include:

1C	Bradford Weston, Inc., Hingham, Mass	$54,106
2	John Kitson, Braintree, Mass	57,142
3	Continental Constr. Corp., Lynnfield Center, Massachusetts	72,350

Bids: 10-31-52 Items	Unit	Quantity	Unit Prices 1 C	2
Granite rip rap in walls	cy	5,300	$3.57	$3.80
in groins	cy	1,250	4.60	4.00
Structure excavation	cy	2,490	1.00	1.00
St chips, back of walls	cy	875	2.50	3.70
Gravel borrow	cy	810	2.50	1.50
4" cmt conc leveling crse	lf	1,550	2.00	3.00
Cement concrete walls	cy	810	24.00	25.00
10" cast iron drains	lf	32	6.00	5.00

Three types of wells, Wash.

Drilling and completing three ground water pumping wells; six to eight test wells; and thirteen observation wells; plus removal of an old well screen and installation of a new one comprise the work to be done under a five-part contract at the Soap Lake Protective Works, Ephrata, Washington. The $23,875 contract drew four bidders and was awarded by the Bureau of Reclamation to Courtney Bach, Yakima, Washington.

Work involves drilling a total of 2,205 linear feet to accommodate 2,085 linear feet of casings having 2, 6, and 12-inch diameters. All well screens required to be installed in the pumping wells will be furnished by the government; other material by the contractor. Work was started October 31, parts 1 and 5 scheduled for completion by August 27, 1953; and parts 2, 3, 4, and 6 to be finished May 29, 1953. L. V. Downs is the supervising engineer.

Hourly wage rates are: bricklayers and stone masons, $3.00; carpenters, $2.57; and general labor, $1.91.

Bidders include:

1C	Courtney Bach, Yakima, Washington	$23,875
2	Ralph Cassel, Yakima, Washington	24,182
4	Frank L. Zimmerman, Moses Lake, Washington	33,814

Bids: 10-16-52 Items	Unit	Quantity	Unit Prices 1 C	2
Mvng in, setting up, dsmnting & remove drill equipment	ls	1	$2,000	$850.00
Pumping wells				
Dring holes for 12" I D casing	lf	345	10.00	10.00
F & I 12" I D casings	lf	255	6.00	6.00
Install screens in wells	lf	90	10.00	5.00
Developing wells	hr	30	10.00	6.00
Move in, set up, inst & rem test pump, equip, & disch pip	ls	1	1,200	500.00
Testing wells	hr	288	10.00	10.00
Test wells				
Dring holes for 6" casing	lf	690	4.00	5.95
F & I 6" casing	lf	660	2.00	2.25
Perforating 6" casing	lf	180	2.00	3.50
Observation wells adjacent to pumping wells				
Dring holes, 2" casing	lf	900	5.00	5.95
F & I 2" dia casing	lf	900	0.50	0.55
Perforating 2" casing	lf	200	1.00	1.00
Observation wells, City of Soap Lake				
Dring holes, 2" casing	lf	270	5.00	5.95
F & I 2" dia casing	lf	270	0.50	0.55
Perforating 2" casing	lf	60	1.00	1.00
Changing screen in well				
Rem screen & install new	hr	32	15.00	8.00

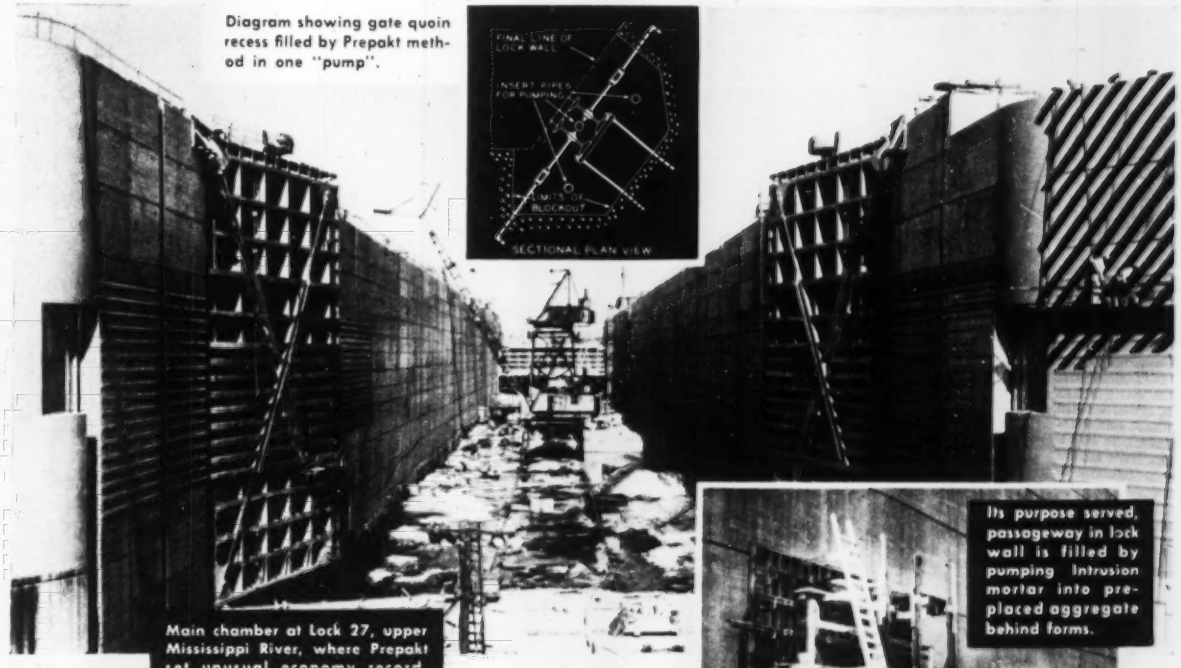


Diagram showing gate quoin recess filled by Prepakt method in one "pump".

Main chamber at Lock 27, upper Mississippi River, where Prepakt set unusual economy record.

Its purpose served, passageway in lock wall is filled by pumping Intrusion mortar into preplaced aggregate behind forms.

PREPAKT DOES DOUBLE DUTY AT GIANT LOCK PROJECT

Prepakt methods and materials facilitate the use of the *blockout* technique in the construction of large concrete structures. Subsequent filling of blockouts is easily done with Prepakt concrete, which assures a high strength permanent bond and no setting shrinkage.

An outstanding economy record was produced by this Prepakt technique at Lock 27, upper Mississippi River. In the building of this structure, having a main lock chamber 70 feet deep and an auxiliary one 41 feet deep, Prepakt provided two-way cost savings.

1. A 15′ x 15′ passage was left in the middle lock wall. This permitted thru-handling of materials for pouring the river wall from the mixing and batching plant in the main lock chamber. In this way, an expensive, time-consuming relocation of this plant was avoided.

2. The same technique proved valuable in hanging the lock gates. The diagram above shows how a quoin recess was blocked out for each gate. After the gates were mounted and adjusted, each blockout was filled with coarse aggregate with the open side being formed for its entire height. Intrusion mortar was then pumped into the preplaced aggregate in one continuous operation for each recess. Time saved over conventional methods of placing concrete in limited lifts totalled *five weeks!*

This is typical of the many advantages produced by Prepakt in structural concrete work of all types.

Full information on this or other Prepakt applications may be had by calling or writing the Main Office, Cleveland, Ohio.

THE PREPAKT CONCRETE CO. **INTRUSION-PREPAKT, INC.**
CLEVELAND 14, OHIO CHICAGO · PHILADELPHIA · ATLANTA SEATTLE · SAN FRANCISCO · DENVER **TORONTO, ONT.**

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There isn't an organization in the construction business who wouldn't be proud of a floor like this.

Floor and roof systems designed from our Longspan Catalog information will put your organization on the BENEFIT end of a job well done. Write for it.

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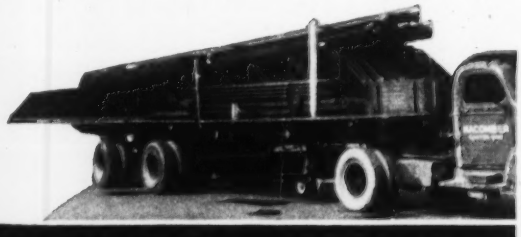

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

STATE HIGHWAY LETTINGS
STREETS AND ROADS
January 27, February 3 Massachusetts January 28 Maine

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Bay Shore Realty Co. (Sponsor includes Gilbane Constr. Co.), 90 Calverley St., Providence, R. I. Separate Contracts. $3,500,000, construct, manage, finance HOUSING, Camp Ave., Quonset Point Naval Air Station, for Dpt. Navy, First Naval Dist., 495 Summer St., Boston, Mass. DAVISVILLE, R. I. CD 12/6/50.

▲ Frouge Constr. Co., Inc., 74 Goodsell St., Bridgeport, Conn., LB, $2,887,000 PHA Conn 7-2 HOUSING, STAMFORD, CONN. City Housing Auth., 56 Putnam Lane, Stamford, Conn. Bids Jan. 6. CD 12/30.

MIDDLE ATLANTIC

STATE HIGHWAY LETTINGS
BRIDGES
January 27 Maryland January 29, February 5 New Jersey

STREETS AND ROADS
February 11 Delaware

BIDS ASKED—BUILDINGS

▲† N. J., Belle Mead—WAREHOUSES—B.A. 3/17—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., 10 warehouses, Approx. $5,000,000. Bid date changed. Hart & Jerman & Assocs., 247 Park Ave., New York, N. Y., archts. CD 12/11.

▲ N. Y., Geneva—HOUSING—B.A. After March—U. S. Eng., 80 Lafayette St., New York, Zone 13, construct, manage, finance, 500 housing, Sampson Air Force Base. Approx. $5,000,000. Extended date. Backus, Crane & Love, 232 Delaware Ave., Buffalo, Zone 2, archts. CD 10/15.

▲ N. J., Dover—BOILER PLANT EXPANSION—B.A. 9/15—U. S. Eng., 80 Lafayette St., New York, 13, N. Y. boiler plant expansion, electric turbine and electric distr. sys., Picatinny Arsenal, $1,000,000-$3,000,000. Burns & Roe, Inc., 233 Broadway, New York, 6, N. Y., engr.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Hilaire Estates Homes, c/o Stanley H. Klein, archt., 89-31, 161 St., Jamaica, N. Y., Owner Builds. $2,000,000. 122 HOUSES, on 45-acre tract, at Woodhull Rd. and Delaware St., HUNTINGTON, N. Y.

▲ Ridge Crest Homes, c/o Henry Mooer, Jr., archt., 250 Main St., White Plains, N. Y. Owner Builds. $2,500,000. 100 HOUSES on tract at Winding Wood Rd. and Ridge St., RYE, N. Y.

SOUTH

STATE HIGHWAY LETTINGS
BRIDGES
January 27 North Carolina

STREETS AND ROADS
January 27 North Carolina

▲ La., Gretna—B.A. 1/28—Jefferson Parish Police Jury, road imprv. Road Dist. A, $2,950,000; road imprvs. Road Dist. 1, $3,725,000.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Shelby Constr. Co., 1106 Canal St., New Orleans, La., LB, $3,835,000, 512 HOUSING UNITS, MIAMI, FLA. Miami Housing Auth., 327 N. W. 62 St., Miami, Fla. Bids Jan. 14. CD 12/8.

▲ Sommer Bros. Constr. Co., Lutzman Lane, Iselin, N. J. Owner Builds, $8,000,000, SHOPPING CENTER, Biscayne Blvd. and 79 St., MIAMI, FLA. Robert Fitch Smith, Shoreland Bldg., Miami, Fla., archt.

▲ Pittman Constr. Co., 2925 Franklin Ave., New Orleans, La. LB $4,369,864. HOUSING, Proj. LB 1-14, NEW ORLEANS, LA. New Orleans Housing Auth., 1111 Tulane Ave., New Orleans, La. Bids Jan. 13. CD 12/8.

MIDDLE WEST

STATE HIGHWAY LETTINGS
BRIDGES
February 3 Wisconsin February 10 Ohio

STREETS AND ROADS
February 3 Wisconsin February 10 Ohio

BIDS ASKED—BUILDINGS

▲ O., Cincinnati—HIGH SCHOOL—B.A. 2/4—Bd. Educ., 216 E. 9 St., 3 story bsmnt., rein.-con., masonry Basin Senior High School, in North Washington Park. $2,500,000. Tietig & Lee, 34 W. 6 St., archts. I. C. Disher, 528 Walnut St., mech. engr. CD 4/3.

▲ Ill., Peoria—Y.M.C.A. BLDG.—B.A. 2/16—Young Men's Christian Assn., 701 Franklin St., 7 story, bsmnt., brick, stone Y.M.C.A. Bldg. $2,500,000. Greeg, Briggs & Foley, 111 W. Washington St., Chicago, Zone 2, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—Ohio Turnpike Comn., 361 E. Broad St., Columbus, Zone 15,
Bethlehem Steel Co., E. 3 St., Bethlehem, Pa., LB $4,637,790, superstructure of Ohio Turnpike Bridge over Cuyahoga River near Peninsula, Summit Co. Bids Jan. 14. CD 12/30.

▲ INDIANA and ILLINOIS—Indiana Toll Bridge Comn., State House, Indianapolis, 4, Ind.
Traylor Bros., Upper Mt. Vernon Rd., Evansville, Ind., CA $2,158,868, superstructure, structural steel spans; rein.-con. substructure Wabash Memorial River Bridge, over Wabash River, Mt. Vernon, Posey Co., Ind. Bids Dec. 16, awarded Jan. 6. CD 12/24, under LB.

▲ INDIANA and KENTUCKY—Indiana Toll Bridge Comn., Indiana State House, Indianapolis, 4, Ind.
Bates & Rogers Constr. Co., 600 W. Jackson Blvd., Chicago, Ill., CA. $1,698,670, rein.-con. substructure;
Mt. Vernon Bridge Co., Mt. Vernon, O., and J. F. Beasley, 28 N. Wacker Dr., Chicago, Ill., CA. $2,648,277, superstructure, vehicular bridge over Ohio River at Lawrenceburg, Dearborn Co., Ind. Bids Nov. 12, awarded Jan. 6. CD 12/24, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ John Griffiths & Son Constr. Co., 228 N. La Salle St., Chicago, 1, Ill., LB, $5,945,739, 2 levels, 400,000 sq. ft. underground GARAGE in Grant Park, Randolph to Monroe Sts., CHICAGO, ILL. Chicago Park Dist., 425 E. 14 St., Chicago, 5, Ill. Bids Jan. 8. CD 12/10.

▲ Francis J. Corr, Inc., 1120 Sheridan St., Lansing, Mich. Owner Builds. $2,000,000. brick SHOPPING CENTER incl. 42 stores, parking area, on 55 acres, Clipper, Saginaw and E. Michigan Sts., LANSING, MICH. CD 6/30/52.

WEST OF MISSISSIPPI

STATE HIGHWAY LETTINGS
BRIDGES
January 30 Missouri

STREETS AND ROADS
January 30 Missouri

BIDS ASKED—BUILDINGS

▲ Mo., Springfield—CHEESE PROCESSING WORKS—B.A. 1/27—Kraft Food Co., 500 N. Peshtigo Court, Chicago 11, Ill.; cheese processing works, $2,000,000. Howard Tonsager, c/o owner, archt.

▲ Mo., Kansas City—SCHOOL—B.A. About 2/1—Bd. Educ., Dr. G. Dewey Smith, asst. supt., Library Bldg., Intercity High School, Truman and Winner Rds., $2,500,000 Keene & Simpson, 15 W. 10 St., Kansas City, Mo., archts. CD 6/10/52.

SOON LETS CONTRACT—BUILDINGS

▲ Tex., Lone Star—DWELLINGS—Mayco Constr. Co., c/o Avery Mays, pres., 7917 Preston Park Dr., Dallas, soon lets contract 160 two-bedroom frame, dwellings, concrete slab fdn., $1,200,000; 100 three-bedroom frame dwellings, concrete slab fdn., $800,000. Charles E. Amstrong, 2742 Burchill St., Fort Worth, archt. Powell & Powell, Thomas Bldg., Dallas, engrs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † South West Town Constr. Co. 113 S. LaSalle St., Chicago, Ill., LB $4,191,000 (wood constr.), airmen's dormitories, mess and admin. bldgs., Lincoln Air Force Base, Inv. 25-066-53-37, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Jan. 8.

▲† Texas Constr. Co., 1909 N. Harwood St., Dallas, Tex. LB. $6,729,670, est. $6,000,000, completing Kirwin Dam on north fork Solomon River dam, spillway, outlet works, Phillips Co., KANSAS. Bureau Reclamation, Dpt. Interior, Kirwin, Kan. Bids Jan. 6. CD 11/18.

▲† Farnsworth & Chambers, P.O. Box 74, Houston, Tex., LB. $1,641,343, base; $1,571,454, Alt. constr. maintenance hangar, Connally Air Force Base. Eng. 41-443-53-24, WACO, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Jan. 8. CD 12/18.

▲† J. W. Bateson Co., Inc., 1121 Irwin Keasler Bldg., Dallas, Tex., LB $3,733,264, two double cantilever, medium bomber hangars; LB $89,119, 600,000 gal. ground steel water storage tank; LB $53,220, 18 in. water lines, pump station, Kirtland Air Force Base, Serial No. Eng. 29-005-53-57, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Jan. 8. CD 1/6.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Amana Refrigeration, Inc., Amana, Ia., Own Forces, $3,500,000, 200,000 sq. ft. PLANT expansion, double railroad car loading facilities, new WAREHOUSE, SERVICE BLDG., etc., AMANA, IA. CD 1/9.

▲ E. I. duPont de Nemours & Co., Inc., duPont Bldg., Wilmington 98, Del. Own Forces. $4,000,000. (1st unit) methionine unit for Organic Chemicals Dpt. PLANT, BEAUMONT, TEX. CD 12/6/51.

▲ H. A. Simmons, Ltd., 16 E. Hastings St., Vancouver, B. C., CA. $7,000,000, design and construct pulp and paper MILL, EVADALE, TEX. East Texas Pulp & Paper Co. (Houston Oil Co. & Time, Inc.), Petroleum Bldg., Houston, Tex. CD 12/16.

▲ Foster-Grant Co., Leominster, Mass., Own Forces. $3,750,000. mono-styrene PLANT, ORANGE, TEX. CD 1/5.

▲ Goodrich Gulf Chemicals, Inc., Orange, Tex. (Parent Owners, B. F. Goodrich Co., 500 S. Main St., Akron, O. and Gulf Oil Corp., Port Arthur, Tex.) Own Forces. $15,000,000 (1st unit), Petrol CHEMICAL PLANT, ORANGE, TEX. CD 11/13.

FAR WEST

STATE HIGHWAY LETTINGS
STREETS AND ROADS
February 5 California

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Westinghouse Electric Corp., G & E Bldg., Denver, Colo., LB, $2,100,000, furnishing installing four 30,000-kva generators for Palisades Power Plant, Spec. DC 3772, IDAHO, Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Jan. 6. CD 10/24.

▲† T. C. Bateson Constr. Co., Irwin Keasler Bldg., Dallas, Tex., CA, $3,258,045, hangar and parking aprons, ENG 04-23-53-128, CASTLE AIR FORCE BASE, CALIF. U. S. Eng., 180 N. Montgomery St. San Francisco Calif. Bids Dec. 2, awarded Jan. 5. CD 12/9, under LB.

▲† Nomellini Constr. Co., P.O. Box 1177, Stockton, Calif., CA, $1,796,761, general purpose WAREHOUSE, etc., Spec., 1671 TRAVIS AIR FORCE BASE CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Dec. 29, awarded Jan. 9. CD 1/6, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Bechtel Corp., 220 Bush St., San Francisco, Calif., CA. Approx. $13,500,000, 6 story walls, semi-outdoor installation for 36,000 kw. addn. to Kyrene STEAM PLANT, TEMPE, ARIZ. Salt River Project Agricultural Imprvt. & Power Dist., 415 W. Van Buren St., Phoenix, Ariz.

CANADA

BIDS ASKED—BUILDINGS

▲ Que., Montreal—OFFICE—B.A. 1/27—Five-fifty Sherbrooke St. W., 15 story, 3 bsmnt. 76x20 ft. office bldg., Sherbrooke St. W. and Aylmer St. $2,000,000. M. M. Kalman, 1200 St. Alexander St., archt.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Hayward Constr. Ltd., 769 Aylmer St., Peterborough, Ont., CA. $2,000,000, COTTAGE PROJECT and SHOPPING CENTER, Haliburton Lake, 15 mi. north of Haliburton, shops, docks, 20 mi. road around lake, HALIBURTON, ONT. Ernest Ridout Real Estate Ltd. 292 Charlotte St., Peterborough, Ont. Awarded Jan. 5. CD 2/28/46.

▲ Anglin Norcross Ontario Ltd., 57 Bloor St. W. Toronto, Ont., CA. $5,000,000, 12 story, bsmnt., OFFICE, 25 Adelaide St. W., TORONTO, ONT. Adel Bay Corp., c/o Wood, Fleming & Co. Ltd., Royal Bank Bldg., Toronto, Ont. E. L. Sheppard, 57 Queen St. W., Toronto, Ont., archt.

▲ Kinard Constr. Ltd., 295 St. James Rd., Pointe Claire, Que., Owner Builds, $1,200,000. 150 COTTAGES, Montee St. Jean, Pointe Claire, MONTREAL, QUE.

▲ R. & J. Larose Ltd., 7409 Bayer St., Montreal, Que., Own Forces, $2,000,000, 14 story, concrete, brick store DWELLINGS on various streets MONTREAL NORTH, QUE. R. Chalifoux, 6275 Papineau Ave., Montreal, Que., archt. CD 1/15.

LATIN AMERICA

BIDS ASKED—HEAVY CONSTRUCTION

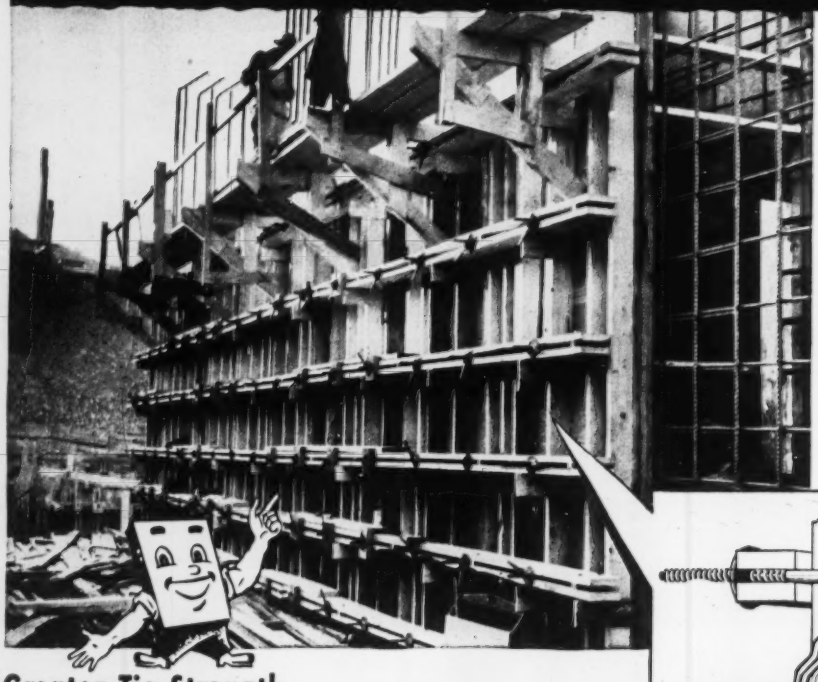
▲ Venezuela, Barquisimeto—Bids Asked—National Institute of Sanitary Works, Dr. J. A. Valero, Carrasquero, Barquisimeto, reservoir and pumping station on Manzano Hill. $3,030,303. CD 8/27/48.

(Proposal Advertisements see p. 83 to 85)

UNIVERSAL Spirolocs

HEAVY DUTY TIES

FASTEST—SAFEST—LOWEST COST



UNIVERSAL Spirolocs—heavy duty Form ties...*Permanent, reuseable equipment*... fast acting Acme threads...washers and stud rods last indefinitely; only *inexpensive* threaded tie rods expended.

Spirolocs provide fast erection...easy stripping... available in various time-saving combinations to fit the exact needs of your job.

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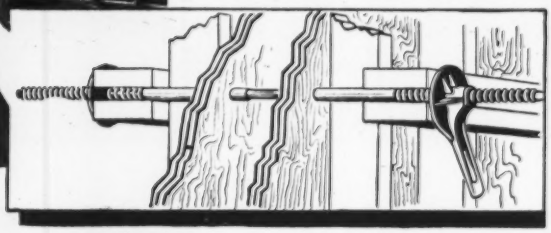

Greater Tie Strength
For less money with Spirolocs

5,000# Ties with ⅜-Tie Rods
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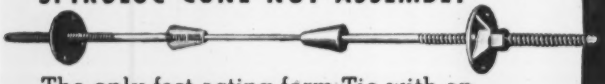
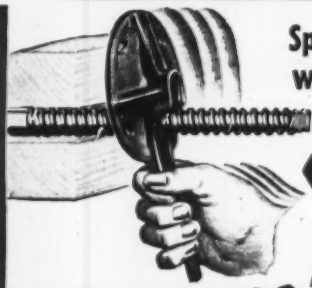
20,000# Ties with ¾-Tie Rods

SPIROLOC CONE NUT ASSEMBLY



The only fast acting form Tie with an absolutely positive spreader...assures smooth surfaced, watertight walls.

Write for complete details on SPIROLOCS and ask for catalog describing Universal Form Tying Accessories.



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SLIP IT ON

SPIROLOCS IN ACTION

THE NUT WASHER
SPIN IT ON

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School building controversy flares in Washington

Taxpayers' association fights Wanamaker proposal for $30 million in additional school-construction funds

The Washington State legislature, now in session in Olympia, is in the middle of a controversy between Mrs. Pearl Wanamaker, state superintendent of public instruction, and the Washington State Taxpayers' Association, over increased funds for school construction.

Mrs. Wanamaker has asked the state legislature to appropriate $30 million to build better schoolhouses. That is in addition to the $172.5 million for common-schools support. The latter figure represents an increase of $48 million over the appropriation for the 1951-52 biennium.

The school chief has graphically presented the case for additional school facilities: Approximately 78,500 children in the state now are attending school on half-day sessions or are housed in makeshift facilities, or represent an overload in regular classrooms, she declared. Mrs. Wanamaker said:

"Approximately 2,650 classrooms—the equivalent of 265 ten-room buildings—are needed to correct this unsatisfactory condition. In addition, on March 1, 1952, more than 8,200 children were housed in buildings that were more than 52 years old; over 120,000 were in buildings that are from 30 to 51 years old. That many of these obsolete structures are no longer safe is evident from the destruction of old school buildings by the earthquake which struck the Pacific Northwest in 1949."

• Need will increase—The situation will get worse in the next few years, according to Mrs. Wanamaker. She estimates that enrollments will increase by 26,000 by October, 1953. That will be followed by an average increase of about 20,000 a year for the next five years, with progressively smaller future annual increases, reaching a total of 149,000 additional pupils by 1965.

Because of this sharp rise in enrollment, the state will require nearly 700 additional classrooms each year from 1953 through 1959, and a total of 5,000 additional classrooms by 1965, according to Mrs. Wanamaker.

MRS. PEARL WANAMAKER . . . New schools revive old arguments.

Her estimates of Washington State school needs will carry weight with the legislators because she has a national reputation in the educational field, and from personal experience is familiar with legislative problems.

A school teacher at 18, and a county superintendent of schools at 24, Mrs. Wanamaker served five terms in the state House of Representatives and state Senate before she was elected state Superintendent of Public Instruction in 1940.

On a number of occasions, Mrs. Wanamaker has received national recognition for her achievements in the field of education.

She served as president of the National Council of Chief State School Officers in 1950-51 and as president of the National Education Association in 1946-47.

Mrs. Wanamaker also won the American Education Award for outstanding contribution to the broad field of education in 1949; the Womens' National Press Club achievement award in education in 1950; and the Altrusa International Distinguished Service Award for 1945-47. She has visited Japan twice on educational missions and was an adviser to the U. S. delegation at the first UNESCO conference at Paris in 1946.

• Objection—Mrs. Pearl Wanamaker's strongest opposition has come from the Washington taxpayers association.

The association has asked the legislature to refuse the $30 million for school construction on two grounds: 1. That an amendment to the state constitution, approved by voters Nov. 4, raises the statutory debt limit for a district to 10% of taxable valuation (it was formerly 5%); adding $100 million to the districts' total bonding capacity; and (2) that $60 million in state funds spent for school construction in the last four years was not distributed entirely on the basis of need.

Schoolmen—aligning themselves with Mrs. Wanamaker—have answers to the first objection of the taxpayers association.

They say that while the increase in the statutory debt limit would be an aid, it does not provide the money where it is needed most. Since one school district cannot lend money to another, addition of $100 million to the total bonding capacity of all school districts does not help a district where enrollment increases faster than assessed valuation.

There is another hurdle: The bonds still must be voted on at an election in which the turnout is equivalent to 40% of the votes in the last general (state) election. Of the total number of voters, 60% must favor the bond issues. Schoolmen contend these are stringent requirements, particularly since the last general election resulted in a record turnout of voters.

And, another constitutional requirement has irked the school districts when they needed construction money. The requirement is that a capital fund levy can be voted for one year only.

Since practical considerations (politics) limit excess levies to about 25 mills, that means that a district must get voter approval of a special levy each year while it is engaged in an extensive building program. One rapidly growing district north of Seattle has been voting 23 extra mills each year for the last eight years, but, at each election, it runs the risk that the school program could be stopped before it reached completion.

• Who gets the money?—The tax-

payers association's second objection that funds have not been distributed entirely on the basis of need—is more difficult for the school administration to answer.

Under the present formula, virtually any district in the state can qualify for a 25% grant toward school construction if it has bonded itself up to half of its capacity. Needy districts can obtain as much as 75% of the total construction costs from the state.

The formula was necessary to obtain state-wide approval of a $40-million bond issue for school construction two years ago. But it permits "rich" districts, such as Seattle, and some communities in the wheat belt, to obtain funds which the taxpayers association says the districts do not need.

The association is supported in this case by the legislature's interim committee on education which earlier recommended that the 25% "floor" be dropped and that need be proved before a school district could obtain state aid.

• **Designs changed**—Mrs. Wanamaker's answer to this was that she has stretched the funds as far as she could.

She cited a "Table of Area Designations" prepared by her department. That table specifies the total number of square feet eligible for state matching funds in elementary schools. In general, it provides 75 to 85 sq ft per pupil.

The table, adopted in May, 1951, already has brought about changes in school building design and construction. Mrs. Wanamaker said:

"It has given impetus to replacement of the traditional 24x40-ft rectangular classroom with a square-shaped classroom of similar area. In a 16-classroom building, that item alone substantially reduces the perimeter of the building and reduces correspondingly the cost of exterior wall construction. In addition, it cuts by approximately 60 ft, the length of the corridor, thus effecting an additional saving in cost."

As another administrative step to stretch the construction dollar, Mrs. Wanamaker established a ceiling on square foot cost to determine the extent of state aid in financing school construction.

Mrs. Wanamaker said that since a ceiling of $13 a sq ft was established in November, 1951, construction costs on comparable buildings in the state have risen to $13.41, but the average square foot cost of 31 school projects financed from July 1 to Sept. 1, 1952, dropped to $11.30 per sq ft.

But these steps, even though they cut costs, do not solve the state's basic problem in school construction—financing.

Washington's tax problem is more difficult than in most other states because the state must obtain virtually all of its revenue from general excise and sales taxes.

The state constitution prohibits a graduated income tax and limits property taxes to 40 mills, with only a small part of the levy going to the state.

But, the legislature, caught in the crossfire between an apparent need for a vastly expanded school-construction program and a demand that no more taxes be added, has one other plan under consideration: An increase in the present 3% sales tax on retail sales.

That proposition may go before the voters early next year. If so, the voters will have the determining voice in the Washington battle for more schools. And, up to the election, that fight for more schools will be continued by Mrs. Pearl Wanamaker—and other state educators—who already have organized scores of meetings throughout the state to win voter approval.

Indiana court decision aids school construction

In a ruling on the Holding Company Act, the Indiana Supreme Court has cleared the way for construction of millions of dollars worth of school buildings. The court, on Jan. 9, upheld the right of the Jefferson-Craig Consolidated School Corp. to enter into a lease arrangement for construction of a school near Vevay, Ind.

The Holding Company Act permits private corporations to build school buildings and lease them to school corporations, enabling districts that have reached their constitutional debt limits to obtain new schools.

In the case decided Jan. 9, the school corporation would repay the private corporation $16,000 a year for 30 years, acquiring the property at the end of that time. The majority opinion of the court was that each year's payment would be considered an indebtedness only as it fell due. That was the major point in the ruling because the Indiana constitution limits a government unit's indebtedness to 2% of its assessed valuation.

Corporation offers to build turnpike in Virginia

The Commonwealth Turnpike Corp. of Virginia last week offered to develop a $31.8-million expressway through Richmond. South of the James River the expressway would link with a proposed toll highway to be built by the corporation between Richmond and Petersburg and 26 miles to the south.

The entire project would start north of Richmond. This new proposal would bring total estimated costs to between $60 million and $70 million. If constructed, an additional bridge will be required across the Appomattox River at Petersburg.

Turnpike bridge bids are received

Four bids have been received by the Ohio Turnpike Commission for a contract to build the superstructure of the Cuyahoga River Bridge in Summit County.

A low bid of $4,637,790 was submitted by the Bethlehem Steel Corp., of Bethlehem, Pa. Other bids and their amounts were:

Allied Structural Steel Co., Chicago, Ill., $4,691,420; American Bridge Division, U. S. Steel Corp., Cincinnati, Ohio, $4,734,438 and Fort Pitt Bridge Works, Pittsburgh, Pa., $4,737,425.

The Norvitz Co., of Cleveland, Ohio, has been awarded the substructure contract for the same bridge on its bid of $1,163,433.

Bay Bridge delay suit set aside by court

The California Toll Bridge Authority won another round last week in the legal battle over construction of the $62-million Richmond-San Rafael Bridge across the north end of San Francisco Bay.

Superior Judge Mervin C. Lernhart upheld the demurrer filed by the authority, setting aside the suit brought by the California Water, Transit and Defense Assn. to delay construction of the bridge. The association, a private group, seeks an earthfill barrier across the bay.

An earlier suit was filed by the North Bay Barrier Assn., seeking to prevent sales of the bonds for construction. Although this suit was denied, the association appealed it to the state supreme court and the appeal has not yet been heard.

Both associations say they plan to appeal.

Slums threaten building funds

Mortgage bankers cite fears that investors will regard deteriorated cities as bad risks

A long, hard look at the problem of city slums and what to do about them was taken in Washington, D. C., last weekend by a group of top mortgage bankers.

Conclusion of key speakers: Unless the progressive deterioration of city housing areas is stopped, the outlook is for community bankruptcy.

James M. Rouse, president of Moss-Rouse Co., Baltimore mortgage bankers, warned the Youth Activities Committee of the Mortgage Bankers Assn. that "people are going to do something about slums" and that it was up to the mortgage bankers to take an active part in planning for urban redevelopment.

Ferd Kramer, president of Draper and Kramer, Inc., Chicago mortgage bankers, echoed this theme. He noted that, "One of the really big firms, which controls tremendous investment portfolios, recently has become apprehensive about the municipal bonds of many large cities." The reason for this, he said, is the steady growth of the blighted areas of those cities and their failure to do anything about it. Kramer warned that if the time comes when municipal bonds are no longer considered a good investment, then it won't be long before large investors will have the same opinion about mortgages in those same cities.

Kramer detailed the problems of Chicago planners in attempting redevelopment on a sizable scale. Back in 1948, the New York Life Insurance Co. made a deal with Chicago's Land Clearance Commission to redevelop 101 acres on Chicago's South Side. This was the first project undertaken after Chicago had come up with a plan that (1) gave authority to exercise eminent domain in assembling tracts, (2) use of public funds to acquire blighted property for resale, (3) allowance of a subsidy to cover the difference between acquisition cost and resale price to the redeveloper, and (4) an established policy of providing relocation housing for the families which would be dispossessed as an inevitable result of the slum clearance program.

Despite the enthusiasm with which the project was received at the outset, the results after four years, according to Kramer, are these: $300,000 in legal fees has been paid out by the company, while less than 10% of the site has been turned over to the builder for construction.

This resulted from the fact that the developer had to deal with "a conglomeration of commissions, committees, authorities, boards, and officials. Among the mayor, the city council, the bureaus and boards, it became a political football."

Objections came from all sides: tenants being forced out of the area, from home-owners who wanted to improve their properties and stay in the area, from landlords collecting high rentals from single-family structures "now bulging with as many as 70 or 80 people."

"I'll venture to say that had the New York Life Insurance Co. known in 1948 what it knows today, Chicago would not have had the slightest chance of getting this project," Kramer declared.

To make a redevelopment program really work, Kramer recommended adoption of the authority already possessed by agencies in New York and Minnesota—that is, right to take possession of land quickly. "In quick taking," Kramer said, "the condemnation suit is filed, possession of the properties is taken immediately, and the courts decide on the price at a future date." But in the meanwhile, the property in question can be turned over to the redeveloper.

Kramer also said that family relocation "cannot be done with a bulldozer" and that "this calls for a stockpile of public housing for the low-income families." It is the "critical key," Kramer said, to freeing land for redevelopment by private enterprise.

Slum prevention is of key importance, also, according to Kramer. "If new slums are made faster than we can reclaim the old, there won't be enough money in the world to save our cities."

Miami sewerage attracts many bidders, low bids

Bids opened last week on more than $22 million worth of sewerage works for Miami, Fla., apparently shaved $170,000 off the engineers' estimate on the cost of the work.

More than 200 interested persons heard bids from 17 contractors read on five major portions of the extensive project (ENR June 12, 1952, p. 51). Apparent low bidders, listed with their bids in the Construction Reports section of this issue, submitted prices totaling $22,064,498 on work including collectors, force mains, pumping stations, a 47-mgd secondary treatment plant, and a sea outfall.

Mackinac bridge financing is feasible, says banker

The proposed 5-mi, 26-span suspension bridge (center span 3,800 ft) across Mackinac Straits in Michigan is feasible from a financing standpoint, B. J. Van Ingen, New York investment banker, has told Prentiss M. Brown, chairman of the Mackinac Bridge Authority.

His conclusion is said to have been based on figures he has obtained from various contractors who might be expected to bid on the work. Final details of a bond sales program are being worked out, so that proceeds can be in hand for a construction start this spring, according to Van Ingen.

At the same time, Mr. Brown has announced that D. B. Steinman, consulting engineer of New York, has been selected by the authority to prepare the final designs for the structure (ENR June 19, 1952, p. 132). Associated in the work will be Glenn B. Woodruff, consulting engineer, of San Francisco.

Back pay reversed

A decision in a back-pay case, of importance to labor and management, was reached recently in Youngstown, Ohio, by an appeals court. The decision reversed a lower-court action, awarding $300 000 to more than 500 former Truscon Steel Co. workers.

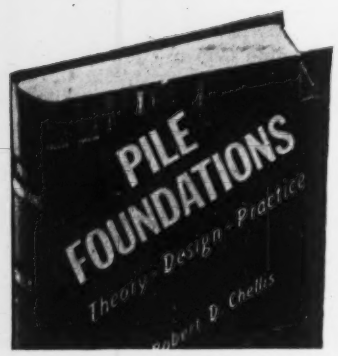
The court upheld a contract clause setting a 120-day time limit on applications by former employees for back pay.

In Cleveland, Ohio, Republic Steel Corp., which now wholly owns Truscon, said that the United Steelworkers had negotiated the contract disposing of wartime payment inequities caused by the steel company's reducing of basic classifications to 32.

After a number of wage inequity payments were made, a group of former employees, who had not filed within the 120 days, sued for the money.

Republic said that the union did not quarrel with the contract and added that industry has made "great efforts" to notify workers if back pay is due.

The rebuffed former employees are next expected to carry the case to the Ohio Supreme Court.



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Awards in Canada hit second highest total; private housing twice '51 volume

Heavy construction contracts total $1,182 million in 1952, but year lags 6% behind 1951 when all-time record was set

Heavy construction contract awards in Canada, as reported by ENGINEERING NEWS-RECORD and the CONSTRUCTION DAILY, totaled $1,182 million in 1952. It was the second highest year on record, trailing 1951 by 6%.

While many types of Canadian construction boomed during the year, there were sharp declines in new industrial and public building volume.

Private unclassified construction, consisting mainly of pipelines and transmission lines, rolled up $171 million in contract awards for 1952. That was more than four times the '51 contract volume.

Private mass housing more than doubled the 1951 volume, amassing $144 million in 1952 contracts. Commercial building also had a big year. The $62 million in awards for that category was up 22% over the total for 1951.

In the public works area, earthwork and waterways jumped 71% above the 1951 contract award mark with a total of $157 million. But most of that total was represented by a $120-million tunnel for the Ontario Hydropower Commission.

Sewerage work also was at a high level. Contracts amounted to $19 million, 36% above 1951.

Bridge construction was up 18% over 1951. Awards topped $21 million. Highway volume, however, slumped 22% to $42 million in '52 awards, but that was more than the 1950 award total for highways.

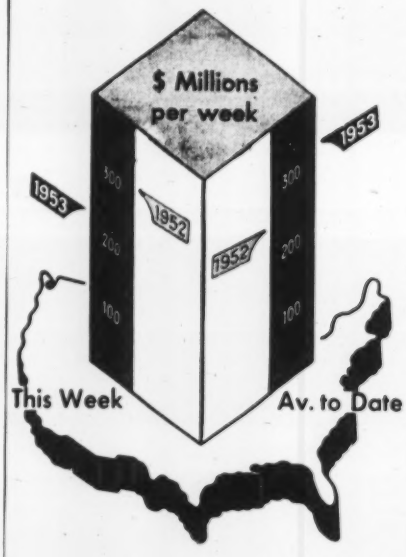
Water works contracts dropped off 19% in 1952, totaling $21 million for the year.

But the biggest decline in Canada's construction volume in 1952 came in industrial building, which fell to half of the '51 volume. Industrial building contracts totalled $220 million in 1952. Last year's volume was still 21% higher than 1950, however.

Public building—on a percentage basis—took a drop almost as far as industrial building. Public housing went down 47% to a total of $43 million in 1952. Contracts for other types of public buildings declined 45%, to a total of $120 million.

Activity This Week

As reported to ENR (in millions of dollars)



Contracts by type of work

	This Week	Cumulative 4 wks 1953	1952	% chge
Waterworks	$5.8	$19.0	$24.5	−22
Sewerage	8.0	24.4	13.1	+86
Bridges	11.0	40.2	13.9	+189
Highways	7.4	102.7	94.1	+9
Earthwork, waterways	4.7	37.2	22.4	+66
Buildings:				
Public	36.4	178.0	104.1	+71
Housg., pub.	10.4	69.6	59.5	+17
Housg., priv.	37.0	186.7	213.0	−12
Commercial	23.2	58.5	27.8	+110
Industrial	54.7	430.0	288.1	+49
Unclassified	30.5	140.3	123.8	+13
Total	**$229.1**	**$1,286.6**	**$984.3**	**+31**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Jan.	587.27	282.30	123.11
	Dec.	587.49	282.41	123.16
Bldg. cost.	Jan.	425.04	229.76	120.82
	Dec.	424.92*	229.70*	120.79*
Volume	Dec.	421	171	122

* Revised

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: February 12, 1953

The Relocation of Cooper's Point Branch Pennsylvania-Reading Seashore Lines

1. Sealed proposals will be received by the Pennsylvania-Reading Seashore Lines at the office of J. L. Gressitt, Chief Engineer, Pennsylvania-Reading Seashore Lines, Room 1658, Broad Street Station Building, 16th and Pennsylvania Boulevard, Philadelphia 3, Pennsylvania, on February 12, 1953 at 2:00 P.M. E.S.T., at which time and place proposals will be publicly opened and read for the Relocation of Cooper's Point Branch Pennsylvania-Reading Seashore Lines, Eliminating 14 Grade Crossings, City of Camden, New Jersey.
2. The work consists of removal of track, rehabilitation of old track and construction of new track in yards and paved streets, street and sidewalk paving; reinforcing existing sewers, etc. The principal items of construction include approximately:—

15,000	s.y. of pavement removed
16,000	s.y. of pavement installed
20,000	c.y. of excavation for tracks and structures
2,000	l.f. reinforced concrete protection for sewer
33,000	l.f. track removed
24,000	l.f. track installed in yards (labor only)
4,200	l.f. track installed in streets (labor only)
66	track connections installed (labor only)
8,400	l.f. timber bearing piles
1,120	l.f. concrete bearing piles
3	railroad yard buildings constructed
1	coal trestle constructed

Related work including construction of sidewalks, curbs, drainage facilities, installation of floodlights, etc., in the Coopers Point and Pavonia Yards of the railroad, and relocation of existing utilities, and miscellaneous items of work, together with demolition necessary in connection with construction.

3. Copies of the drawings and specifications and blank proposals may be examined at the above office.
4. Copies of the Contract Documents, including the Drawings, Specifications, General Conditions, Proposal and Contract Forms, may be obtained at the above office. A deposit of Twenty-five dollars ($25.00) will be required for each set of Contract Documents taken from the above office, check being made payable to the Pennsylvania-Reading Seashore Lines. Deposits will be refunded in full to each actual bidder upon the return of the Contract Documents in good condition within ten (10) days after opening bids. Subcontractors and those other than actual bidders will be refunded 50% of deposit upon return of the Contract Documents in good condition within ten (10) days after opening bids.
5. Each proposal must be made upon the blanks furnished with the drawings and specifications, and in case of corporations not chartered in New Jersey, must be accompanied by proper certificate that such corporation is authorized to do business in New Jersey.
6. Each proposal must be accompanied by a bidder's bond, cash, certified or cashier's check to the order of the Pennsylvania-Reading Seashore Lines in an amount equal to five percent (5%) of the amount of the bid.
7. The Owner reserves the right to waive any informality in, or to reject, any or all bids.

PENNSYLVANIA-READING SEASHORE LINES
BY:— J. L. GRESSITT,
CHIEF ENGINEER

DATE: MAY 28, 1952.
REVISED: DECEMBER 1, 1952.

Bids: February 3, 1953

Hoboken—Port Authority Piers

THE PORT OF NEW YORK AUTHORITY
BORINGS
CONTRACT HP-110.004

Sealed proposals for making borings in an area near Pier 6 at Hoboken, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, New York, until 2:45 o'clock on the afternoon of Tuesday, February 3, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, January 22, 1953

Bids: February 2, 1953

New Castle Avenue Interchange Lighting

THE DELAWARE MEMORIAL BRIDGE
NOTICE TO BIDDERS
CONTRACT No. 26

Sealed proposals for furnishing and installing New Castle Avenue Interchange Lighting for the Delaware Memorial Bridge will be received by the Delaware State Highway Department at the office of the Director, Delaware Crossing Division, Field Office, Delaware Memorial Bridge, Delaware, until 12 o'clock noon Eastern Standard Time, February 2, 1953, at which time and place said proposals will be opened and read.

The work involves the following principal quantities:

Trenching and Backfilling	7,900 lin. ft.
Underground Metal Conduit	700 lin. ft.
No. 4/0 A.W.G. Lighting Conductor	2,600 lin. ft.
No. 4 A.W.G. Lighting Conductor	15,500 lin. ft.
Light Standards	46

Work on Contract No. 26 shall begin promptly after the execution of the Contract and shall be completed on or before July 1, 1953.

Monthly payment will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check to the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within twenty (20) days from the date of opening proposals. The right is reserved to reject any or all bids.

One set of the contract documents may be obtained from the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. after January 10, 1953, upon payment of $10.00. Contract documents need not be returned to the Engineers and the above payment will not be refunded.

The Plans and Specifications and other contract documents may be examined at the office of the Director, Delaware Crossing Division, and at the office of the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. For information as to the location of the Director's office, inquiry should be made at the Administration Building, Toll Plaza, Delaware Memorial Bridge.

State Highway Department
by: J. H. Tyler, McConnell, Chairman
W. A. McWilliams, Director
Delaware Crossing Division
January 8, 1953

(More Official Proposals on Pgs. 84 & 85)

Announcing—

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Issue Date:
February 19, 1953

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OFFICIAL PROPOSALS

Bids: February 26, 1953

Sanitary Sewers

Sealed proposals will be received at the office of the Department of Service and Buildings, of the City of Dayton, State of Ohio, until 12:00 o'clock noon Eastern Standard Time, Thursday, February 26, 1953, for furnishing all materials and constructing sanitary sewers in that portion of the City of Dayton located East of the Stillwater River, North of the Great Miami River and West of North Dixie Drive, and thereafter will be publicly opened and read.

The project consists primarily of approximately 1400 ft. of 42" pipe sewer; 9300 ft. of 36" pipe sewer; 4200 ft. of 18" pipe sewer; 33,000 ft. of 8" pipe sewer, and miscellaneous other items.

It is to be asumed that the total cost of the improvement will not exceed $531,802.30. Bids shall be accompanied by a certified check upon some solvent bank or a bond executed by a surety company authorized to do business in Ohio, or a bond of the United States or the City of Dayton for a sum equal to 5% of the amount of the bid submitted as a guarantee that if the bid is accepted a contract will be entered into and its performance properly secured. Plans, specifications and proposal forms may be obtained from the City Engineer, 500 Municipal Building, Dayton 2, Ohio, upon payment of $25.00 per set. Checks shall be made payable to the City of Dayton. Refund will be made for return of plans and specifications in good condition provided the plans are returned within 30 days after the award of the contract. The City reserves the right to reject any or all bids or to accept the proposal which appears most advantageous.

George F. Baker
Director of Service and Buildings
Municipal Building
Dayton 2, Ohio

Bids: January 29, 1953

Spec. SM-51

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on January 29, 1953 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATION AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE BRUCKNER BOULEVARD FROM MAJOR DEEGAN EXPRESSWAY AND TRIBOROUGH BRIDGE TO BRONX RIVER EXPRESSWAY, NEW YORK CITY, BRONX COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-51

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith Stae Office Building, Albany 1, N. Y.
(b) J. J. Darcy, Dist. Engr., Montauk Highway, Babylon, N. Y.
(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms, is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $41,325.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2067.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

R. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

Bids: February 10, 1953

Gasoline-Engine Generator Sets

CONTRACT 437

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, February 10, 1953, for Contract 437, for furnishing, testing, delivering and unloading gasoline-engine generator sets with switchgear and appurtenances for the West Branch and the Kensico South effluent chambers of the Delaware Aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of two thousand dollars ($2,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained in Room 1316 at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: February 5, 1953

Hoboken—Port Authority Piers

THE PORT OF NEW YORK AUTHORITY
FIRE DOORS BETWEEN EXISTING PIERS AND HEADHOUSES
CONTRACT HP-110.003

Sealed proposals for the furnishing and installation of fire doors between the existing piers and headhouses at the Hoboken—Port Authority Piers at Hoboken, New Jersey will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, New York, until 2:30 o'clock on the afternoon of Thursday, February 5, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, January 22, 1953

Bids: February 3, 1953

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACTS NO. 93, 93A, 93B and 93C

The work to be done under these Contracts consists generally of the furnishing and installation of additional roadway and area lighting for the service areas and Interchanges along the New Jersey Turnpike.

Principal items of work for Contracts No. 93A, 93B and 93C includes:

	Contract No. 93A	Contract No. 93B	Contract No. 93C
Trenching and Backfilling	39,000 lin. ft.	25,000 lin. ft.	46,000 lin. ft.
Asbestos-Cement Conduit.	37,700 lin. ft.	24,200 lin. ft.	49,600 lin. ft.
Galvanized Wrought Iron Conduit	2,050 lin. ft.	1,800 lin. ft.	1,550 lin. ft.
Underground Series Lighting Conductor	77,000 lin. ft.	58,000 lin. ft.	112,000 lin. ft.
Light Standards	234 units	148 units	231 units
Luminaire Installations	234 units	148 units	231 units
Transformer Installations	None	None	2 units

The principal items of work for Contract No. 93 equal the sum of the quantities listed for Contracts No. 93A, 93B and 93C.

Proposals will be received at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, until 11:00 A. M., Eastern Standard Time, on the morning of February 3, 1953, at which time and place proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plant and equipment.

Contract documents may be seen and may be inspected by prospective bidders during regular office hours, after January 17, 1953 at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York.

Contract Documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications, for Construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) per cent of the highest amount bid for any alternate in the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the hour named. Where proposals are submitted for more than one contract, one check and one bond based on the total price bid for the largest amount of work included in any combination of proposals, will be sufficient. Copies of the proposal form to be used for submitting proposals, of the form for the proposal bond, of the form to be used for the financial statement and for the plan and equipment statement to be submitted with the proposal and of the special addressed envelope are furnished in detached form with the contract documents.

The Contract will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals or to accept that proposal which, in its sole judgment, the Authority deems to be in its best interests.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

January 15, 1953

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF HIGHWAYS, D. C., January 15, 1953. SEALED PROPOSALS will be received in Room 429, District Building, 14th and E Streets, N.W., Washington 4, D. C., until 2:00 P.M., February 11, 1953, EASTERN STANDARD TIME, and then publicly opened and read for constructing two (2) bridges of reinforced concrete of rigid frame type on New York Avenue, N.E., respectively. The bridge over the Pennsylvania Railroad has six spans with an approximate overall length of 334 feet. Approximate quantities of major items are: 21,200 cubic yards excavation, 11,000 cubic yards concrete, 2,095,000 pounds reinforcing steel, 7,500 square feet stone facing, 82,600 pounds steel false-work beams. The bridge over South Dakota Avenue, N.E., has one (1) span 66 feet 11 inches clear. Approximate quantities are: 22,000 cubic yards excavation, 2,142 cubic yards concrete, 253,000 pounds reinforcing steel, 3,300 square feet of stone facing. Alternate proposals will be received for either bridge or both bridges. Proposal forms, plans and specifications may be obtained from the Secretary, Contract Board, D. C., Room 427, District Building, upon the deposit of a certified check made payable to the Collector of Taxes, D. C., in the amount of Twenty Dollars ($20.00). (Telephone National 8-6000, Ext. 2378)

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U. S. Government

BIDS FOR LEVEE WORK—Memphis District, Corps of Engineers, U. S. Army, P. O. Box 97, Memphis 1, Tenn. Sealed bids will be received at this office until 11:00 a.m., C.S.T., 5 February 1953, and then publicly opened, for approximately 27,500,000 cubic yards channel excavation and embankment along the St. Francis River in St. Francis and Lee Counties, Arkansas. $25.00 deposit required on plans. Information on request.

SEARCHLIGHT SECTION

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New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 29th day of January 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, 353 Broadway, Albany, 1, N. Y.				
Schenectady	M 53-1	Movable Dam No. 5, Lock 9, 0.11 Barge Canal, Town of Rotterdam		Repairing Substructure of South Span and Misc. Work	$51,000 Plans $15	$926,038
		DISTRICT No. 2				
		L. KETCHUM, 109 No. Genesee St., Utica, New York				
Oneida	FAC 53-1 FASH 53-1 FARC 53-2	City of Rome: Black River Boulevard Pts. 1 & 2 Rome-Northwestern Pt. 2, S. H. 562 Proj. U-415(8)	2.43	Asp. Conc. Ty. 1-A, Opt. = 2.36 Mi. Misc. Work = 0.07 Mi.	$54,000 Plans $25	978,000
		DISTRICT No. 4				
		E. G. YOUNGMANN, Barge Canal Terminal, Rochester, N. Y.				
Monroe	LOSP 53-1 RC 53-6	Lake Ontario State Parkway Sect. C West Greece-Menitou Beach, S. H. 1281	0.37	9" Cem. Conc. Pavt. 24' Var. Wide = 0.23 Mi. Fdtn. Crse. Gravel = 0.02 Mi. Misc. Work = 0.12 Mi. Gr. Sep. Rigid Rame 91.7	$18,000 Plans $10	312,000
Monroe	FAC 53-2	Ridge Road West: City of Rochester Proj. U-402(8)	0.78	Traffic Signal System	$2,000 Plans $10	36,000
Monroe	FARC 53-7	Rochester-Scottsville, S. H. 79 Proj. U-762(2)	1.01	9" Cem. Conc. Pavt. 24' Wide = 0.96 Mi., Misc. Work = 0.05 Mi., 3 Sp. Alpha I-Beam 138	$22,000 Plans $10	399,000
Ontario	FASS 53-1	Canandaigua-Bristol Center-Jones Cors. Pt. 3 & 1, C. R. 32 Proj. S-387(1)	4.73	Bit. Mac. Pen. Meth.	$18,000 Plans $15	321,000
Ontario	OT 53-3 RC 53-8 ST 53-3	N. Y. State Thwy-Ontario Sect. Subd. 15 & 16 (Port Gibson Rd.—Seneca Co. Line); Phelps-Newark Pt. 1, S. H. 1726; Thy. Geneva-Lyons Pt. 2, S. H. 5252 & 11 Cross and Acc. Rds.	5.29 Acc. 12.70 Thy.	9" Cem. Conc. Pavt. 2@25 Var. Wide = 13.11 Mi. Asp. Conc. Ty. 1-A, Opt. = 2.27 Mi. Bit. Treat. Gravel = 1.59 Mi. Fdtn. Crse. Gravel = 0.33 Mi. Bit. Mac. = 0.15 Mi., Misc. Work = 0.54 Mi. 10 Alpha I-Beam Gr. Seps 2 I-Beam Gr. Seps. 1 Conc. Closed Box Gr. Sep. 2 Alpha I-Beam Brs. 2 I-Beam Brs.	$508,000 Plans $100	9,234,000
		DISTRICT No. 5				
		C. R. WATERS, District Engineer, 65 Court St., Buffalo, N. Y.				
Erie	OT 53-1 ST 53-2	N. Y. Thruway-Ontario Section-Sub. 15 (Ransom Rd.Genesee Co. Line); 4 Co. Rd. Cross Roads and 4 Relocated Marginal Rds.	2.30 Acc. 7.68 Thy.	2 Crse. Cem. Conc. Pavt. 2@25 Wide = 7.64 Mi. Bit. Mac. Ty. 1 = 2.30 Mi, Misc. Work = 0.04 Mi. 4 Gr. Seps. Alpha I-Beams 226', 222', 236' and 232'	$225,000 Plans $50	4,050,000
		DISTRICT No. 8				
		J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.				
Columbia	FARC 53-3	Hudson-Hollowville, S. H. 650 Proj. F & U 564(5)	0.40	9" Cem. Conc. Pavt. 24'-36' Wide, Alpha I-Beam Br. 300'	$22,000 Plans $10	397,000
Westchester	H.T. 53-2	N. Y. State Thwy-Hudson Sect.-Sub. 9B (Tappan Zee Bridge) (Substr. Bents 156 thru 165)	0.10	Reinf. Conc. Rigid Frame Bents and Misc. Work	$57,000 Plans $10	1,036,000
Rockland & Westchester	H.T. 53-1	N. Y. State Thwy Hudson Sect.-Sub. 9B (Tappan Zee Bridge) (Superst. So. Nyack Abut. to Bent. 165)	1.60 1.60	Plate Girders and Alpha I-Beams	$205,000 Plans $15	3,762,000
		DISTRICT No. 10.				
		J. J. DARCY, Dist. Engr., Montauk Highway at Little East Neck Rd., Babylon, L. I., New York				
Bronx	FAMDE53-1	Major Deegan Expressway (Cont. 13) (Interchange at Grand Concourse) Proj. U-1082(6)	1.22	Granite Block Pavt. = 0.19 Mi. 9" Cem. Conc. Pavt. 2 @32' Wide = 0.88 Mi. Misc. Work = 0.15 Mi. Gr. Sep. Alpha I-Beam 167'	$100,000 Plans $50	1,785,000
Suffolk	FARC 53-1	Cold Spring-Huntington Fort Salonga Pt. 3, S. H. 815S Smithtown-Fort Salonga Pt. 2, S. H. 1291 Proj. F-272(3)	3.32	Asp. Conc. Ty. 1-A, Opt.	$20,000 Plans $10	371,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

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(Continued on the opposite page)

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(Continued from opposite page)

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Northwest 6
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1—24"	120 "	29'6"
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1—24"	105 "	34'
10—24"	115 "	34'
1—24"	120 "	34'
1—24"	140 "	34'
6—26"	150 "	33'
4—26"	150 "	34'
3—26"	90 "	34'
2—28"	105 "	31'6"
6—28"	105 "	34'
1—28"	165 "	34'
2—28"	165 "	37'6"
2—28"	180 "	37'6"
3—30"	120 "	29'6"
1—30"	120 "	34'
1—30"	180 "	34'6"
1—30"	200 "	34'

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STATIONARY COMPRESSOR

One Gardner-Denver class WBG

complete with 75 HP motor, 3 phase, 220 volt, 60 cycle, 1200 RPM motor with compensator, base, air filters, after-cooler, separator, tank receiver, gages and safety valves, serial 102656 6 V-belt drive, displacement 387 cubic feet at 100#, now in use at West Pittsburgh, Penna. Available in three months, reasonable.

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3 Yd. Model 955 P&H. 80-Ft. Boom. Two (2) Buckets. Buda Diesel Motor

New 1946 Serial No. 8621
Price $35,000.00

FS-6495, Engineering News-Record
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3—Euclid End Dumps, Model 2FD
1—D8 Cat. Angle Dozer, 2 PCU. S/N 2U7054
1—500 CFM Cat Power Portable LeRoi Compressor
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All located in Florida. Reply to

FS-5844, Engineering News-Record
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Osgood Model 200 Dragline and Backhoe
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1952 D-2 CATERPILLAR TRACTOR

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Approx. Wt. 21 Ton Each
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Whirley portal gantry cranes (2) 40-ton, elec.
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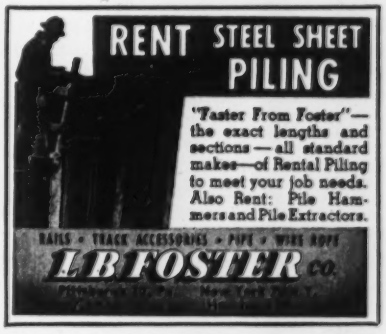

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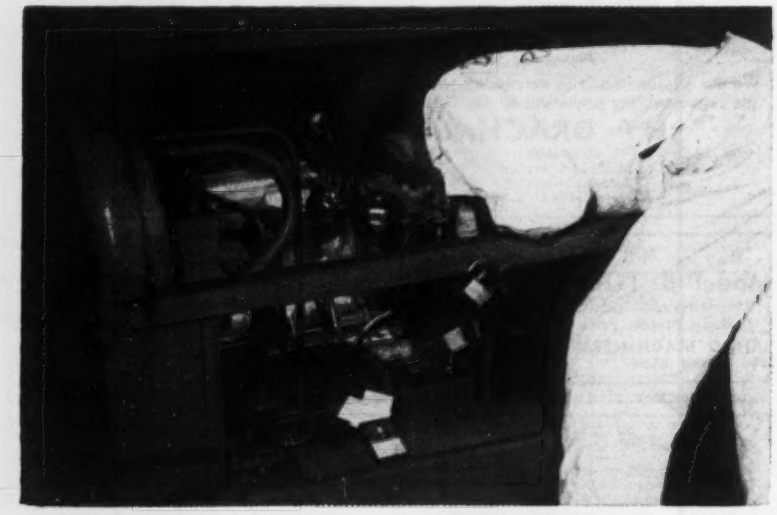


LEANING OVER the motor of a Unit crane, Al Gavillet of Bay Equipment Co., Richmond, Calif., adds AD-X2 battery rejuvenator to one of his pieces of rental equipment.

M.I.T. gives OK to battery additive

Meanwhile Bureau of Standards says it's of no value but contractors continue to save money with it

A COMMERCIAL storage battery rejuvenator, branded by the U. S. Bureau of Standards as "harmless, at best" has been given the blessing of scientists at Massachusetts Institute of Technology. The MIT findings, made at the request of Senator Sparkman's Small Business Committee, are in direct conflict with the research conclusions of the National Bureau of Standards which for years has insisted that no battery additive it has tested —including this one—is of any value.

The additive, known as AD-X2, is manufactured by Pioneers, Inc., Oakland, Calif., and is the secret brainchild of Jess M. Ritchie, former construction superintendent and now president of the company.

AD-X2 is not patented. Ritchie says he needn't patent it, because it's his secret he stumbled on during an 8-month period several years ago in which he tested some 1,600 chemical combinations. It's made chiefly of sodium and magnesium sulfates, along with some traces of various other elements.

Application is simple. When a gang of batteries is treated, especially in a piece of construction equipment, a package of AD-X2 is added gradually, washed into the cells with battery water. The engine is started and run for 30 min to charge the battery. New batteries can be treated in the same way and one application is said to last the lifetime of a battery. On large batteries, one packet of powder is added for each quart of cell volume. The additive prevents sulfation of the lead plates which eventually makes them hard and brittle, at which point they will not take a charge. AD-X2 has reactivated many so-called "dead" batteries.

The San Francisco Bay area was the scene of first tests of AD-X2 in construction equipment. Gordon Jaeger, maintenance super for Dinwiddie Construction Co. there, has records that show savings of 70% in battery replacement costs and 80% on equipment down-time resulting from battery failures.

Batteries in equipment rented to contractors really take a beating and are often returned bone dry, according to Al Gavillet, maintenance foreman for Bay Equipment Co., Richmond, Calif., in the picture above shown adding the powder to a battery. He reports that 40% of the batteries powering his equipment are more than three years old, thanks to the AD-X2 treatments which have kept them in operation.

Al Bender, equipment super for Bechtel Corp. on the American-Arabian pipeline job, found that the additive quadrupled the life of his equipment batteries. Because of the high temperature, normal life of a battery in the desert is three months. According to Bender, most of his batteries were still in operation after 11 months, at which time his duties as superintendent were ended. All this was going on while the Bureau of Standards was saying that this and all other powdered additives were of no value.

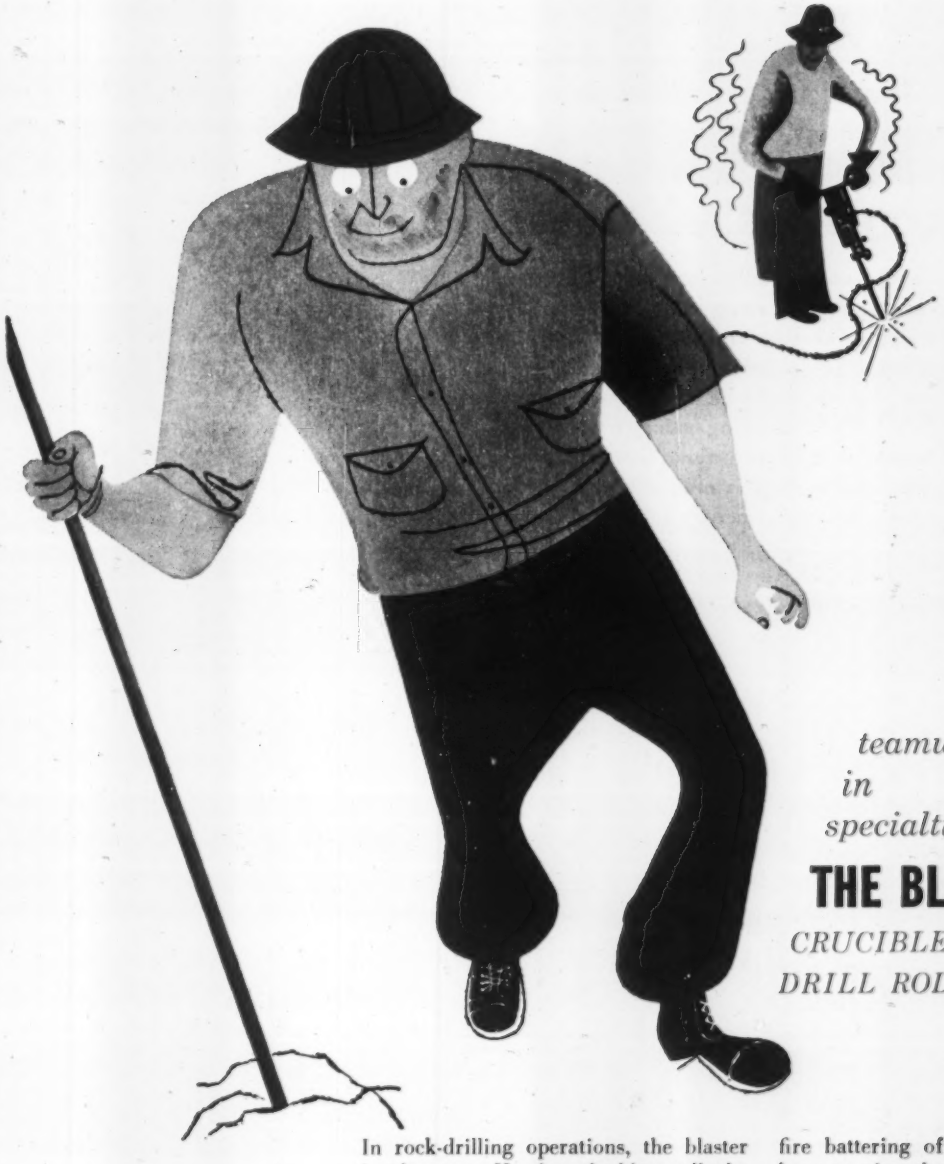
The MIT report is voluminous and brings to light one new twist in the case of AD-X2—a political twist at that. One of the interesting sidelights in the controversy over the efficacy of the additive is the experience of United Carr Fastener Corp., Cambridge, Mass. The firm has several huge fork lift trucks whose batteries cost in the neighborhood of $1,300. One of these batteries had been pronounced dead and a new one ordered when Ritchie's Boston representative appeared on the scene. He came up with this proposition: Use $160 worth of AD-X2 to rejuvenate the "dead" battery. If it worked, the company would pay for the treatment; if it didn't, they wouldn't have to pay. The powder worked. Since then the firm has re-ordered the treatment twice. Here's the political twist, though. Chairman of the Board for the company is Sinclair Weeks, new Secretary of Commerce whose departments includes Bureau of Standards. PIONEERS INC., 2411 GROVE STREET, OAKLAND 12, CALIF.

Protective device indicates output of welding machines

The LINC-THAW is a new protective device which will give an engine-driven welding machine protection from overload damage when the machine is being used to thaw frozen water pipes. No welder should be used for continuous operation above its rated capacity. The machine may overheat, causing either serious damage to the insulation or complete burnout.

The LINC-THAW, manufactured by The Lincoln Electric Company, hooks into the output circuit of the welder and indicates at all times what current is passing through the lines. A fuse also limits current output to the rated maximum for the generator on continuous duty.

The unit can be attached directly to the frame of the machine or placed in any convenient location nearby. Output leads of the machine are con-



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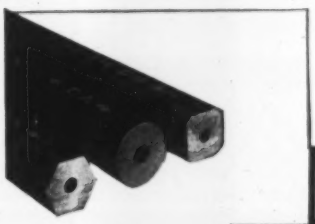
He expects . . . and gets . . . peak efficiency from his men and the tools they use.

This is why Crucible Hollow Drill Rods rank first with crews supervised by top-notch blasters. Experience has shown them that Crucible rods stand the rapid-fire battering of modern rock-drilling longer; give them the least breakage, the greatest service life.

Crucible Hollow Drill Rods are right for the job because they are made by the world's largest producer of *tool and high speed steels*. From this metallurgical experience come the high mechanical properties that have set record after record for least cost per foot drilled. Use Crucible Hollow Drill Rods in all your drilling operations.



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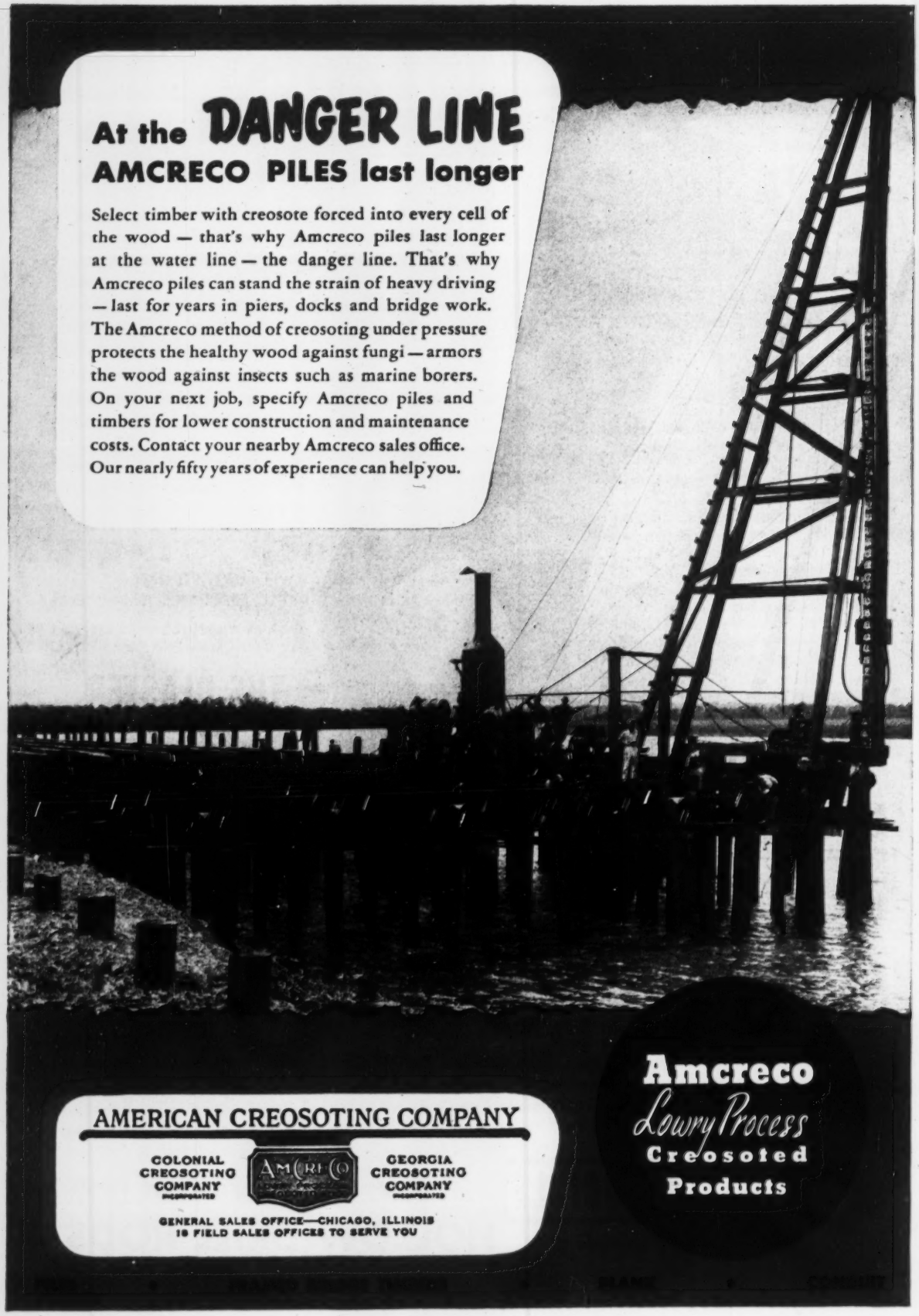
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AMCRECO PILES last longer
Select timber with creosote forced into every cell of the wood — that's why Amcreco piles last longer at the water line — the danger line. That's why Amcreco piles can stand the strain of heavy driving — last for years in piers, docks and bridge work. The Amcreco method of creosoting under pressure protects the healthy wood against fungi — armors the wood against insects such as marine borers. On your next job, specify Amcreco piles and timbers for lower construction and maintenance costs. Contact your nearby Amcreco sales office. Our nearly fifty years of experience can help you.
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18 FIELD SALES OFFICES TO SERVE YOU

nected to one side and leads to the frozen water service to the other.

Although the device is designed in several ratings for operation with Lincoln shield-arc engine-driven welders of 200, 300 and 400-amps capacity, it may be used on any make or model of engine-driven welder. Two limitations: It must be used only with the proper lag-type fuse and must be used only with the size of machine for which it has been rated. LINCOLN ELECTRIC COMPANY, CLEVELAND 17, OHIO.

All-bronze weather strip fastens to wood or metal

Kel-eez is a new all-bronze strip which attaches directly to either wood or metal frames and is held firmly in place by a special adhesive guaranteed to last indefinitely for weather-stripping of doors.

No nails, screws or other fasteners are needed, according to the manufacturer. A workman simply pulls the paper covering from adhesive attached to the material and presses the strip into place. A complete door is said to be weather-stripped in less than 20 min.

Kel-eez consists of a flat base strip 1⅜ in. wide with rolled edges supporting a thin gage tempered bronze insert that bows out approximately ¼ in. from the base strip. Sides of the insert work freely under the rolled edges of the base strip and the insert spreads out when depressed by the door edge, providing a broad contact surface and completely sealing the surface to be insulated.

The product can be used for bottoms as well as for tops and sides of doors. Unlike side strips, however, the bottom strip is channel-shaped and slips onto the underside of a door where it is held tightly in place by the spring tension of its upright sides. The metal strips can be cut with ordinary tin snips. The product is packaged in

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POWER! That's what you get with this MM loader unit—big-capacity lifting plus real power down-crowding performance.

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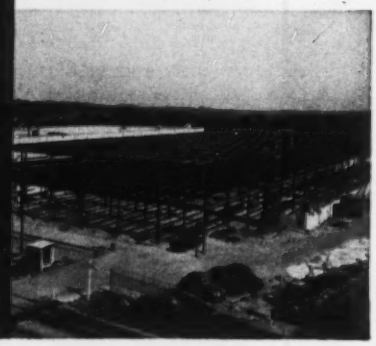

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1907 EDGAR ST.
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sets for all standard-size doors and is available in 3- and 4-ft lengths for windows. KUNKEL PRODUCTS, INC., 217 ASH STREET, AKRON, OHIO.

Double graded lubricants announced by Kendall

In January, 1952, the Society of Automotive Engineers' Technical Board adopted an SAE-75-grade gear lubricant, designed to take care of extremely low temperature service, especially when and where gear shifting is a problem. It was aimed at reducing service complaints in areas of low temperature operation. The Kendall Refining Company responded by marketing an SAE-75/80-gear lubricant.

The company's research engineers reasoned that the ideal lubricant would be one that combined the fluidity characteristics of an SAE-75 with the stability and extra gear protection offered in an SAE-80. Such a lubricant could be used safely over a much wider range of atmospheric and operating temperatures.

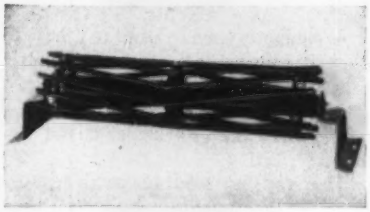
They produced an SAE 75/80, which led to further research and the ultimate development of an SAE 80/90 and an SAE 90/140. These three double graded lubricants will be marketed in Kendall's All-Oil as well as their SCL hypoid multi-purpose type of gear lubricants. Kendall claims to be the first and only refiner to market a complete line of such double-graded gear lubricants. KENDALL REFINING COMPANY, BRADFORD, PENNSYLVANIA.

Custom-fit canvas cover heats tractor operator

Custom-fitted Comfort heaters, made of heavy weather-resistant canvas and a framework of iron, can be had for every standard tractor to funnel the maximum amount of engine heat to the operator's body in addition to keeping his legs and hands protected from the weather.

There are no belly straps or ties under the tractor to snag on brush or other obstructions and the canvas covers have flaps for access to starting motor, oil sticks, etc.

Each model is equipped with a fold-back motor panel for control of engine heat to an operator. Tension springs keep the cover tight and prevent sagging when motor panels are folded back. Heavy plastic windshields for front, rear and sides of operator's cab may be obtained as optional extras. COMFORT EQUIPMENT COMPANY, 2609 WALNUT, KANSAS CITY, MISSOURI.



Conveyor return rolls prevent material build-up

Wet, exceedingly fine or sticky materials carried on conveyor belts often adhere to the return run and build up unevenly on bottom return rolls. This often causes a belt to weave from side to side, making contact between its edges and hangers, brackets or other structural members of the conveyor. Thus, severe tearing can occur if the situation is not checked and constant maintenance provided.

To prevent build-up on these return rolls, Barber-Greene Co. offers the self-cleaning Chevron Rod return roll pictured. Because of the open design, material has almost no area on which to build up. In addition, the vibrating or slapping action of the rods helps dislodge a good deal of sticky or wet material. The manufacturer claims that the design of the Chevron Rod return roll exerts an aligning force on the belt, with easier maintained true alignment and elimination of edge wear.

The new roll is a feature of Barber-Greene's Permanent Conveyor Line and is available from authorized B-G distributors. BARBER-GREENE CO., 400 N. HIGHLAND AVENUE, AURORA, ILLINOIS.

Loader fills caulking guns direct from bulk containers

Perhaps the most bothersome and messy feature in connection with the use of caulking guns is the method of reloading them from a shipping can with a wooden spatula. A new lever-action gun loader called the Force-Flo fits over a 50-lb, 5-gal caulking pail of standard 11¼-in. diameter. After it is locked into place, a caulking gun cylinder can be clamped quickly to a loading tube.

The operator then works the pumping lever up and down approximately two full strokes to deliver a pound of material smoothly and solidly into the caulking gun barrel. The outer surface of the gun stays free and clean from excess material, assures easier gun handling and clean hands, and elim-

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Elis ADJUSTABLE SHORES

Save Costs and Speed up the work

• Here is erection simplicity and dependability at its best. Five or more Elis Adjustable Shores can be erected while you are measuring, cutting, splicing, erecting, and wedging one 4x4 shore. This modern method means just one simple operation and you cut labor costs by three-fourths. Another advantage is that you use the same form lumber over and over again, eliminating waste. When not needed for shores, the same 4x4's are available for joists, joist bearers, wall studs, mud sills, etc.

The Elis Shorehead Clamp

Made entirely of malleable iron and steel. It is permanently bolted to a 32 in. 4x4 to make a shorehead. It takes only a few seconds to attach this shorehead to the top of an Elis Shore for use under beams. This shorehead is not necessary for shores under slabs.

The Elis Clamp

No brittle cast parts to crack or fail —only steel and malleable iron are used. It will withstand the roughest treatment. The clamps, even after the shore has carried a heavy load, are loosened with a light tap of a hammer. Elis Clamps make your own 4x4's last ten times longer than ordinarily.

The Elis Jack

Made of malleable iron. It has an open side making it easy to slip on a 4x4 to make adjustments, and also for leveling and lifting heavy loads. It is not needed for erecting shores. Both the Clamps and Jacks have no loose links, cotter pins, springs, or trigger work to get lost or give trouble.

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Portugal harnesses flood waters for power, irrigation

Flood control, irrigation and electrical power—vital needs in southern Portugal—will be provided by the Barragem de Campilhas, an earth-fill dam now being built in Province Alentejo for the Direccao Geral dos Servicos Hidraulicos.

Societe Coloniale de Construction, S.A., "SOCOL" of Lisbon, worldwide contractors handling all 981,000 cu. yds. of earth involved, reports their *most effective earthmoving machines have been 2 electric-control C Tournapulls* (scraper capacity, 13.5 yds.; speeds to 35 m.p.h.).

Moving heavy, wet loam and clay, the 2 units load, haul and spread 108 to 120 cu. yds. per hour on 5600-ft. cycles. They maintain high speeds despite heavy rains, steep grades, and restricted dump areas.

Have 6 LeTourneau units in Belgian Congo

Another division of this famous company, SOCOL of Belgian Congo, reported similar outstanding results with their 3 C Tournapulls and 3 Tournadozers (rubber-tired Bulldozers with speed range to 19 m.p.h.). These were used recently to complete the first highway built under private contract in Belgian Congo—186 miles of all-weather road between Luputa and Kabinda. Both this African highway and the dam in Portugal will be in public use more quickly and with materially lower cost than would have been possible with manual or any other mechanical method of construction.

J. E. Villars, SOCOL director, reports that under difficulties, "Tournapulls have outperformed and outproduced all similar equipment."

It will pay you to learn how these fast, modern, rubber-tired Tournapulls and Tournadozers can speed up production and lower costs on *your* dirtmoving work.

To get an idea of what these units can do on a specific job, call your LeTourneau Distributor or write directly to us outlining your requirements in yardage, haul length, etc.

Loaded Tournapull speeds up 6% grade to fill area — makes complete 5600-ft. cycle of load, haul, and spread every 8 minutes.

R. G. LeTOURNEAU, INC.

Peoria, Illinois

Tournapull—Tournadozer—Trademark Reg. U. S. Pat. Off. EX 99 2

inates the necessity of wiping cloths or costly cleaning solvents.

A rubber-capped piston rod has a unique follower-lock that automatically stops the piston disk in any position, sealing the material in the container when the gun loader is not in use.

This can be used to good advantage by contractors, builders and maintenance men in industrial plants, etc. to fill cylinders fast with caulking, glazing, pointing and sealing compounds—in fact any viscous solutions in refinery-filled containers. FORCE FLO, INC., 6810 EUCLID AVENUE, CLEVELAND, OHIO.

Gasoline-powered chain saw has five attachments

Mall Tool Company is offering a new, completely die-cast, 29-lb No. 2MG combination gasoline engine and chain saw. The 5-hp saw has attachments which can convert it quickly to: 1) an earth augur for digging post holes; (2) a wood drill using ¼ to ¾-in. chucks for boring holes for all types of construction; (3) concrete vibrator for fast compaction; (4) concrete surfacer for smoothing hardened concrete, removing form marks and irregularities; (5) sump pump for draining trenches, excavations, caissons, pumping at the rate of 5000 gpm.

All of these attachments are said to be quickly assembled with the main unit. MALL TOOL COMPANY, 7725 SOUTH CHICAGO AVENUE, CHICAGO 19, ILLINOIS.

One-hand tacker shoots three sizes of staples

The T-50 gun tacker shoots patented wedge-pointed wire staples up to ⅜ in. leg length and is small enough to fit the contour of the hand for comfortable use.

It has a patented non-clogging mechanism that prevents jamming or clogging and permits only one staple at a time to be ejected from the staple track.

There are several advantages of staple-tacking with the new T-50, according to the manufacturer. It loads 125 staples for fast, continuous tacking and one-hand operation permits freedom of the other hand to hold material.

Of all-steel construction and all-chrome finish, the T-50 handles Arrow staples in three sizes up to ⅜ in. leg. length. ARROW FASTENER COMPANY, INC., 1 JUNIUS STREET, BROOKLYN 12, N. Y.

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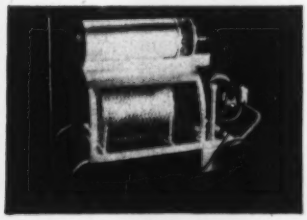
Model B, shown above, delivers 350,000 BTU per hour. Other units shown below. Get the facts now . . . mail coupon below.



Model RF delivers 168,000 BTU per hour. Provides two kinds of heat . . . radiant . . . forced air by means of auxiliary fan.

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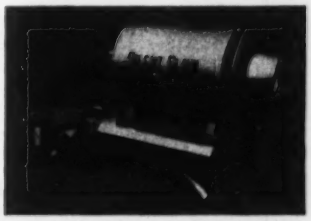

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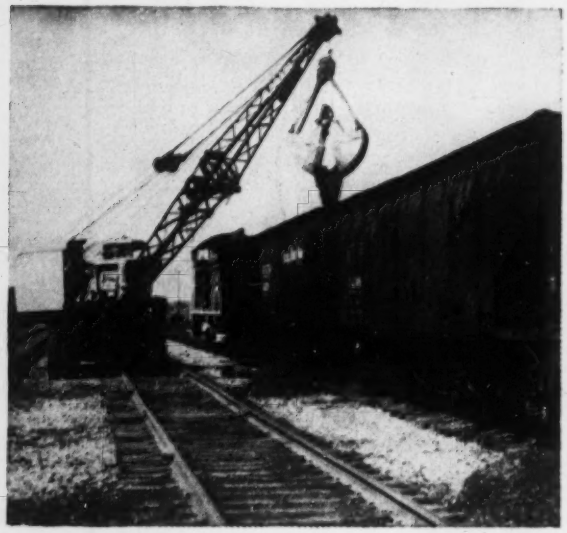
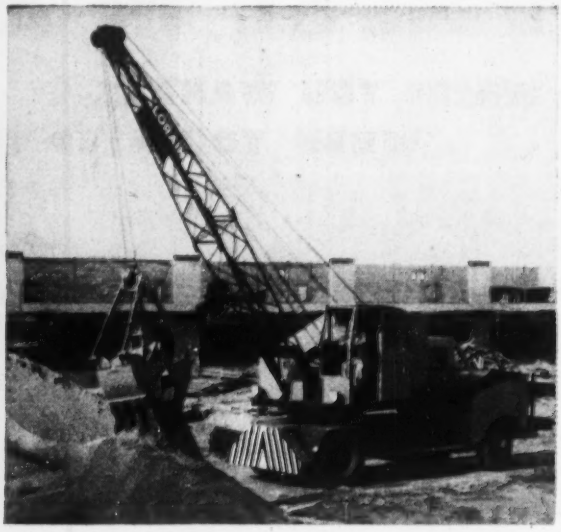




Thew adds to its line of Lorain cranes

Included are a 30-ton rig on a three-axle carrier and a 6-ton superstructure to mount on any truck

ADDITIONAL CRANE capacity selection has been added to the Lorain line of rubber-tired machines. The new 30-ton capacity machine (left, above) is available in both the Moto-Crane and Self-Propelled models, which are designated MC-524 and SP-524 respectively.

• **3-axle carriers**—The Moto-Crane model has an automotive type 3-axle carrier with 10 forward and 2 reverse speeds. It can attain over-the-road speeds up to 30 mph and its tractive effort, coupled with double rear-axle bogies, provides good travel over soft or rough ground. Carrier is available with 2-rear-axle drive (6x4) or with additional front driving action (6x6). All accessories for highway operation are standard and the rig is convertible to crane, dragline, clamshell, backhoe or shovel. As a shovel it's rated in the 1-cu yd class.

The SP-524 has the same basic turntable on the same 3-axle carrier, but propelled by the turntable engine at speeds up to 7½ mph. This particular model has four speeds in each direction and is driven by double rear axles only (6x4).

Each type has air brakes, air-assist steering and can be powered by either diesel or gasoline engine. The increased width (120 in. for the MC and 123 in. for the SP) gives greater lifting capacities without need for outriggers. The boom is approximately ½ wider and deeper in cross-section than previous types, can be extended to 100 ft with a 25-ft tip extension, and has a floating harness that permits 8-part reeving of boom hoist cable.

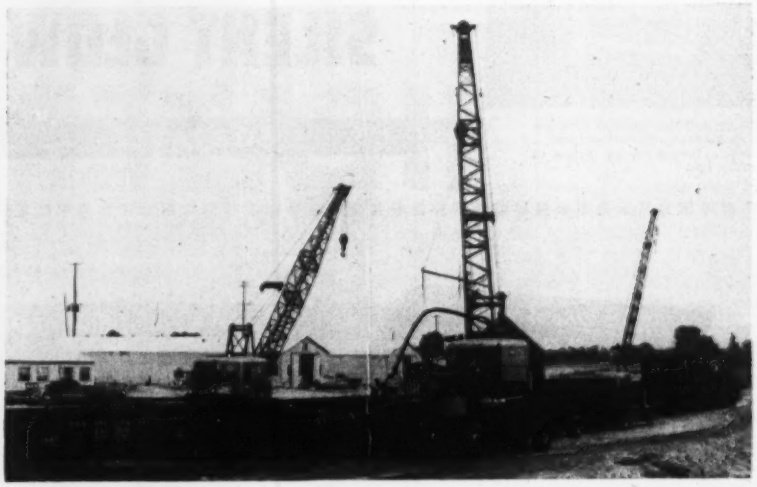
There are three main boom head sheaves plus auxiliary deflector sheaves that will permit reeving up to six parts of hoist line without use of a top block.

• **6-tonner can be field-mounted**—The 6-ton truck crane, designated as Lorain Model TL-10 is a complete superstructure equipped as a lifting crane and interchangeable to ¾-yd clamshell or dragline work.

Model TL-10 designed for field mounting on an owner's truck, but is also mountable on piers, barges, docks, trailers, flat cars, etc. It has the usual TL series features including anti-friction bearings, oil-enclosed gears, interchangeable clutch shoes, etc.

The TL-10 is a 2-drum, gasoline-powered rig with a 2-piece, butt-flange 25-ft boom. Center sections can extend this to 45 ft. Several features are optional, including a power boom-lowering device.

While designed for light-duty crane work, it's of heavy-duty construction throughout, with drop-forged turntable rollers and 3-in.-wide shoe-type clutches. Two 12-in. pitch diameter drums hold 200 ft of ½-in. cable each and no lagging is required, according to the manufacturer. The boom hoist drum, of 8-in. pitch diameter, has a powered take-up reel that can store



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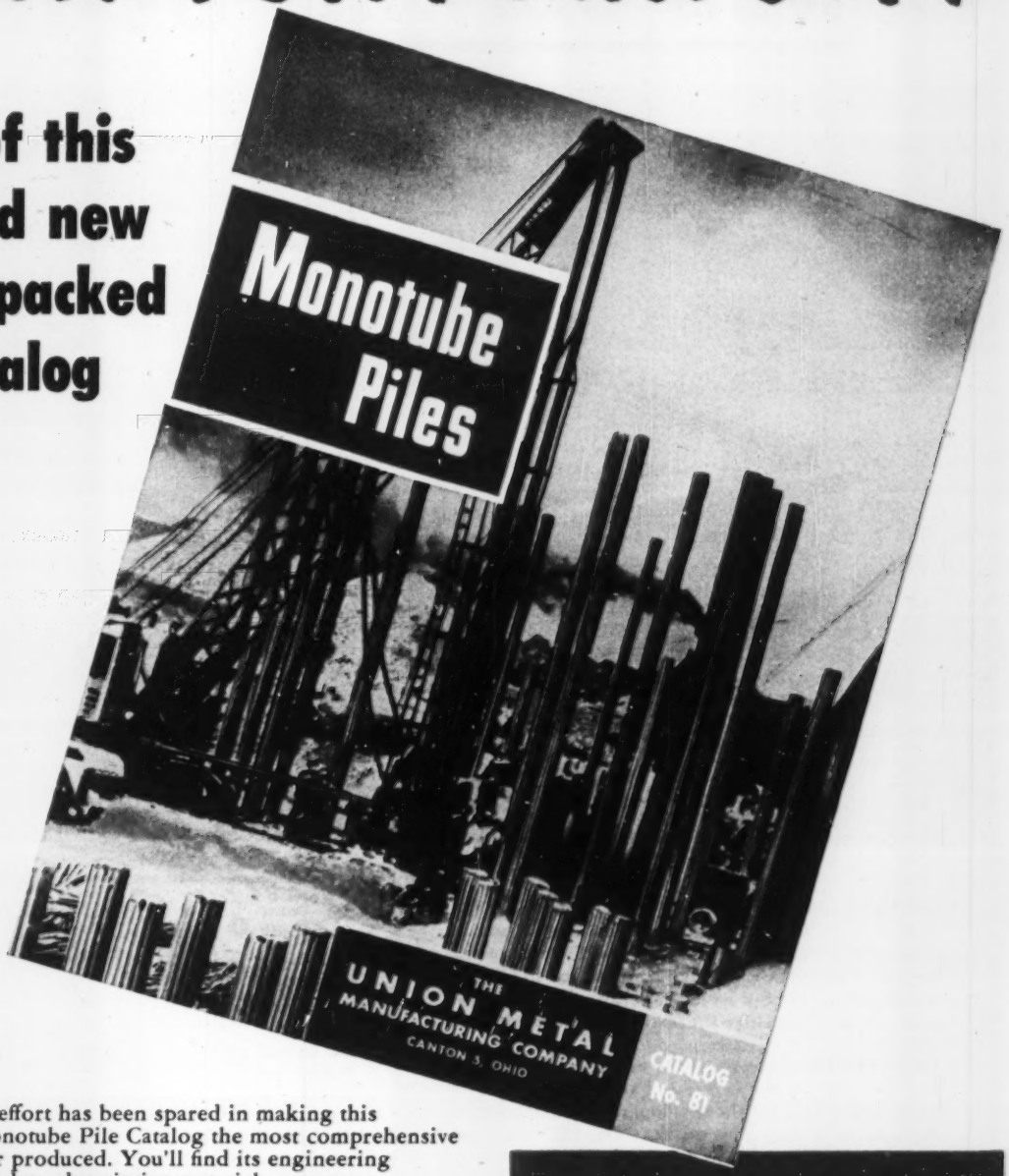

NO effort has been spared in making this new Monotube Pile Catalog the most comprehensive one ever produced. You'll find its engineering and test data, descriptive material, numerous application photos, etc., to be interesting, helpful and valuable as a reference source. For your copy, use the handy coupon or write to The Union Metal Manufacturing Co., Canton 5, Ohio.

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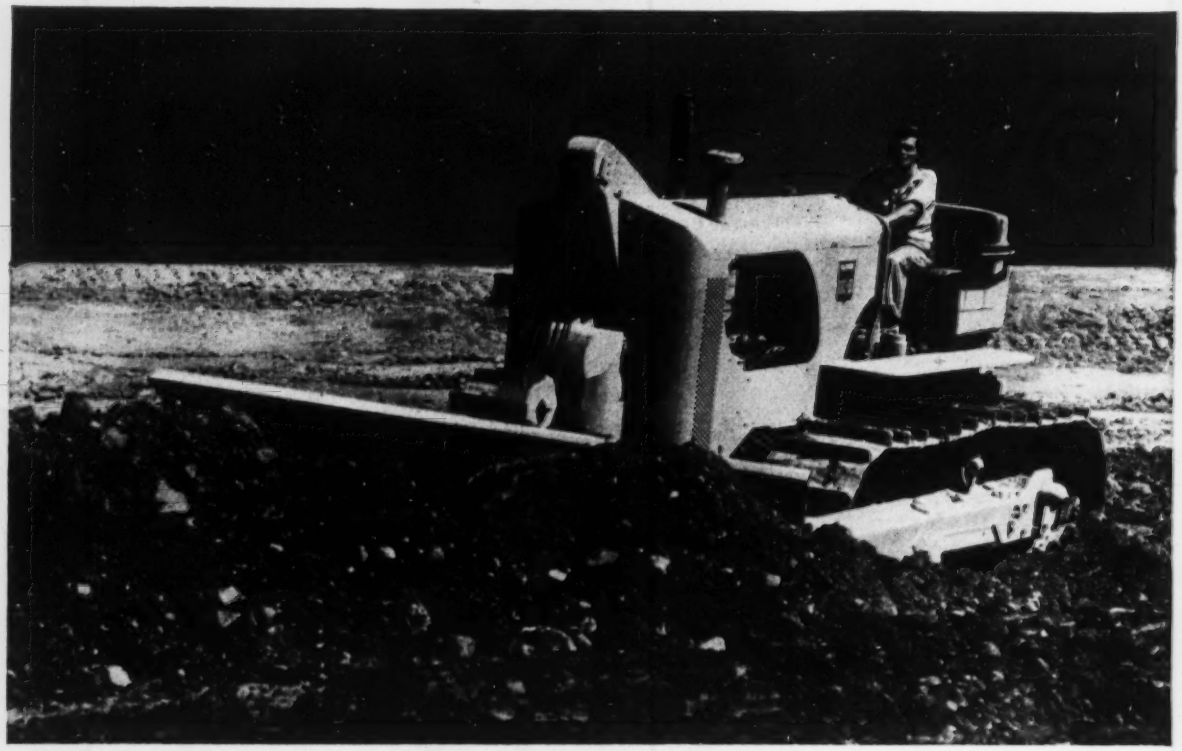
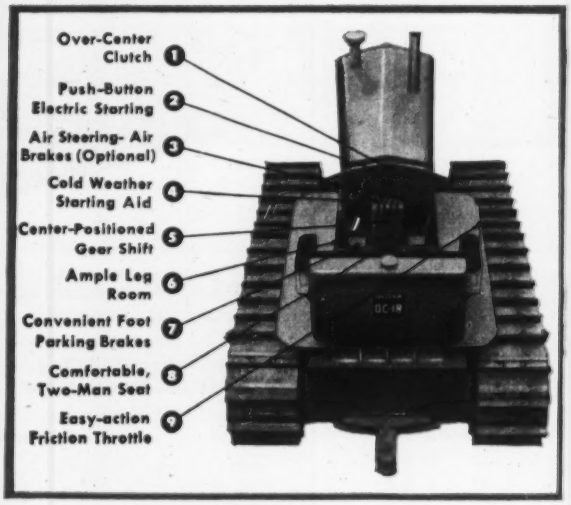
Owners' pride . . . Operators' delight the NEW OLIVER "OC-18"



OWNERS can't say enough good things about the new Oliver "OC-18." They keep telling us how it does more work . . . how that full 133* drawbar horsepower gives it plenty of power for the really tough jobs . . . about its low operating and maintenance costs . . . and how the operators and mechanics like it.

OPERATORS are even more enthusiastic. It's the first big tractor they've found that is designed to make life easier for them. They tell us that toward the end of a long day on the "OC-18," they are much less fatigued, much more fit to continue giving top performance. The illustration shows clearly the 9 important "easy operating" features of the "OC-18." No other tractor boasts all these. They make the "OC-18" "the operators' dream come true."

Ask your Oliver Industrial Distributor to arrange a demonstration. Or if you prefer, write to The Oliver Corporation, 400 W. Madison St., Chicago, Illinois.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Easy-action Friction Throttle 9

*OFFICIAL NEBRASKA TEST NO. 489

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Ill.

A complete line of industrial wheel and crawler tractors

100 ft of excess cable which often results from the change of boom lengths.

• **Front duals on 45-tonner**—Pictured at bottom of page 104 is the Lorain MC-824, a 45-ton Moto-Crane at work unloading 80-ft long reinforcing rods from a railroad car for Ebasco Services Corp. on the Joppa, Ill., power plant job. The New York company owns several Lorains, two more of which are in the background. The purpose of the dual wheels is to increase the axle load capacity on the huge rubber-tired machines. The axles are made by Timken but Thew manufactures the differential hubs under license from the Differential Hub Co. These hubs allow the inner and outer wheels to rotate independently, preventing the scrubbing on one tire or the other that occurs when they are rigidly connected. These dual wheels can also be used on the SP-414 Self-Propelled crane and on the MC-524 Moto-Crane. THE THEW SHOVEL CO., LORAIN, OHIO.

Vapor-seal duct insulation prevents condensation

Fiberglas vapor-seal duct insulation has been designed to prevent condensation on air conditioning ducts which carry cool air in warm, humid areas. This condensation which forms on ducts creates a serious problem in such places, and the new type of material is said to stop condensation by enclosing the duct in thermal insulation that has a built-in vapor barrier of asphalt and kraft paper. Insulation alone has not solved the problem since the vapor passes through it eventually, and damp insulation loses its thermal insulating value. In addition, condensation may damage the duct, its exterior finish and even the internal construction of the building.

The company claims that the use of Fiberglas vapor-seal duct insulation helps lower the installation costs because it is applied in a single operation.

Material is furnished in 24x48-in. panels and in thicknesses of ¾, 1, 1½ and 2 in. Like Fiberglas itself, vapor-seal duct insulation may be cut easily and accurately to any shape. A 1-in. thickness of the material weighs only about ½ lb per sq ft. Owens-Corning engineers point out that if the insulation is used where it is exposed to weather or abuse, it must be protected by a covering and canvas and paint, sheet metal or roofing felt. OWENS-CORNING FIBERGLAS CORPORATION, TOLEDO 1, OHIO.

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EDITORIALS

No more big dams?

IN HIS SWAN SONG as Secretary of Interior Oscar L. Chapman made the dire prediction that no more big dams can be built if the new administration keeps its election promises. This interesting bit of broad conclusion jumping deserves a little thought on at least two counts. In the first place, no campaign promise is recalled, and none was cited by Mr. Chapman, that specifically mentioned the question of big dams. Second, the first of the big dams, and still a pretty famous and successful one, Hoover Dam, was planned and built by an administration of the same political persuasion as the one that takes office this week.

What bothers Mr. Chapman, if we may be permitted to do some conclusion jumping of our own, is that some of the campaign promises suggested that there might be some different and better ways to handle hydro power development than those espoused by Mr. Chapman and his predecessors. In brief, it has been their contention that only the federal government—and preferably the Department of the Interior—could build and operate hydro power dams.

But is major river development, including the building of large dams, only possible if the federal government always does the whole job? We think not, and can cite a few typical alternatives. Enlarging the power generation plant at Niagara Falls can be done by the private utilities as well as or better than by the federal government. The St. Lawrence power development, including big dams, can be built as well by the State of New York as by the federal government; or it can be built by the Corps of Engineers and operated by the state. Further development of the Columbia River and other streams in the Northwest can be carried out by local interests, public and private, which would pay for the power facilities by revenue bonds. The power dam at Roanoke Rapids in North Carolina can be built by a private utility without any taxpayer cost and with as full protection of the public's interest as though the Interior Department handled it.

Nor is development of the Hell's Canyon site on the Snake River necessarily a choice of one big federal dam or several smaller private utility dams, as has been claimed. It may well be that a will to solve this problem with engineering and economics unencumbered by politics might find all parties agreeing on either one of the proposed solutions. All these things could be done and still leave numerous multi-purpose dams whose construction can best be handled by the Bureau of Reclamation or the Corps of Engineers.

The important point is that river development and the construction of big dams can be carried out in a variety of ways. Mr. Chapman sees them as possible only if the federal government is the sole participant. That the states, other local interests and the private utilities might be considered as partners in such work is to him an outmoded theory.

It is possible that some of the campaign promises suggested that this theory of cooperation might be revived and put into use. It is not possible to find any promise that, if carried out, would prevent the building of large dams. They are necessary adjuncts to an expanding economy and a higher standard of living—and as such will continue to be built regardless of election campaigns or results thereof.

More federal road aid

THERE IS LOGIC in the action of the American Association of State Highway Officials, taken at its Kansas City meeting, in calling upon the federal government to return to the states as highway aid all the money collected by the federal government in the form of gasoline taxes.

For years, the federal government has opposed the diversion by the states of their income from motor-vehicle taxes to other than highway construction or maintenance. All federal-aid highway acts passed since 1934 have contained a provision permitting the Secretary of Agriculture to cut the federal-aid highway funds by as much as one-third in the case of any state that increases its diversion of such tax income to other than highway purposes. That prohibition applies to income from "state motor-vehicle registration fees, licenses, gasoline taxes and other special taxes on motor vehicles and operators."

What applies to the states should apply to the federal government. In addition to gasoline taxes, it collects excise taxes on motor vehicles and automotive parts. For the first 10 months in 1952, these taxes totaled almost $1.7 billion. The gasoline tax alone is expected to be close to $1 billion. Only about half of this will be paid out to the states as federal highway aid.

The AASHO recommendation that all this gas-tax income be spent on roads appears to have a better chance of getting congressional approval than have the recommendations of two recent conferences of state governors. The governors urged the federal government to retire completely from the field of gasoline taxation, leaving that field open to the states. Congress is not likely to abandon any field of taxation, although it might agree to devote all the income from that source to a special purpose during an emergency such as the present one in the field of highway construction. Congress could reduce the amount of highway aid when the emergency is past. It could not so easily restore an abandoned tax.

Under such circumstances the AASHO proposal appears both logical and timely.

Structure designed under direction of Ing. Jose Menendez of Comision de Fomento Nacional; Manuel Ray, Resident Engineer.

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